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An Address
ON
THE SPECIFIC ACTION OF DRUGS IN TUBERCULOSIS.*

BY
W. E. DIXON, M.D., F.R.S.,
READER IN PHARMACOLOGY, UNIVERSITY OF CAMBRIDGE.

IT is now well recognized that a patient suffering from tuberculosis who is placed under the charge of a doctor will, for a time at least, improve in health no matter what drugs, vaccines, or specialty of treatment may be employed. The beneficial result is due in this, as in other diseases, to efficient nursing, to the regulation of food, exercise, and sleep, and to light and fresh air. If only this effect were clearly recognized the number of "treatments" in vogue for this common disease might be diminished. The enthusiastic physician sometimes begins the new treatment so soon as the patient enters his wards, and he is apt to put down the wonderful effects which may follow to the new drug, a view which unfortunately he neglects to rectify when the patient dies. General hygienic measures are of primary importance in treatment, and it is not until all the beneficial effects, which we know will ensue from these alone, have been exhausted that we have any right to ascribe an effect, beneficent or otherwise, to a special treatment.

Drugs are employed in tuberculosis either with the object of attacking and preventing the growth of the tubercle bacillus or other organisms with which the disease may be associated, or of neutralizing poisonous toxins, or of removing or relieving symptoms. It is to the first group that I am directing your attention to-day.

The ideal for which we search is an internal antiseptic, something which will prevent the growth of the tubercle bacillus without injuring the host, and this principle of internal antisepsis has now come to be termed "chemotherapy."

COAL-TAR DERIVATIVES.

The ordinary common antiseptics like phenol and the coal-tar derivatives (cresol, guaiacol)—mercury perchloride and formalin, for example—act in the same way on almost all micro-organisms; their antiseptic action is greatly diminished by admixture with serum, and when injected into the animal body they destroy the animal before they destroy the parasites. Innumerable attempts have been made to synthesize more active antiseptics, and two recent products of the laboratory I will mention. By brominating cresol a tetrabromcresol is obtained, which is 250 times more active than phenol and only half as toxic; by brominating naphthol tribromnaphthol is formed, which prevents the growth of staphylococci in dilutions of 1 in 250,000. Nevertheless, as internal antiseptics they are useless: they affect body tissues before parasites, and much of their antiseptic action is destroyed by tissue proteins.

If these coal-tar derivatives (cinnamic acid, creosote, guaiacol, and the rest) exert a beneficial action on tuberculous patients, the explanation is not that they influence directly the tubercle bacillus. The same is, of course, true of formic aldehyde, at one time much in vogue as a vapour for inhalation by phthisical patients. Occasionally also it was injected intravenously, and not infrequently produced albuminuria, haematuria, and even coma. Formic aldehyde, of course, in the body at once combines with proteins and loses all antiseptic action.

ESSENTIAL OILS.

Essential oils have been the basis of many systems of "cure"; thus the oil of cinnamon and oil of garlic treatments have each had its day; it were idle to describe them in detail, as it is universally recognized that, like other specifics, they fail in the hands of the sceptical physician. Fischer made numerous experiments on animals and showed, for example, that menthol eucalyptol injections into tuberculous rabbits in no way altered the course of the disease. *In vitro* such antiseptics as thymol and the cresols inhibit the growth of virulent human tubercle bacilli in strengths of 1 in 10,000, and these are the most active members of the group. Guaiacol and cresote only inhibit in strengths of 1 in 1,000, so that as bactericidal agents they are valueless.

CALCIUM.

I will mention here two or three other substances which have been alleged to exert specific effects in tuberculosis, although not by direct destruction of the tubercle bacillus. Many have written on the beneficent action of calcium: thus Maendl treated 250 patients with intravenous injections of 5 c.cm. 10 per cent. calcium chloride every day or second day. The injections were given in alternate weeks, and each patient received twenty injections. All the symptoms were influenced favourably. Calcium deficiency is a well known condition of many disease, including tuberculosis, and calcium injections may influence favourably the condition by limiting inflammatory exudation, but they do not influence the cause of the condition.

SILICA.

Silica is another of these specifics of recent date. Maver and Wells, in a review of the literature on silica therapy, come to the conclusion that the beneficial effects described are not established. They made some experiments with silica casein metaphosphate on tuberculous guinea-pigs, but found no increase in the duration of life or alteration in the tuberculous process.

ARSENIC AND MERCURY.

The employment of compounds of arsenic and mercury is particularly instructive because each new introduction has been described as being curative by one group of physicians and worthless by another. De Witt described certain mercury compounds which cause fibrosis and healing of tubercles in different organs in slowly progressing chronic tuberculosis of experimental origin. These effects were not seen in the control animals, however long they lived. Mercuri-bis-*p*-nitrophenol and mono-ethyl-*p*-nitraniline mercury acetate were the compounds he used. The injections produced no nephritis in any animal. Inhalation of arsenic has been described as effecting cures by Chavant. On the other hand, careful experiments made with the likely organic arsenic derivatives such as arsphenamine and its silver compounds show that they have no action on the pathogenicity of the tubercle bacillus and no favourable influence on the disease.

QUININE DERIVATIVES.

Chemotherapeutic agents have a specific selective action on certain tissues and bacteria, probably physical rather than chemical, and, unlike the group we have considered up to now, their disinfectant action is not retarded by admixture with serum, but, on the contrary, is increased. How selective these substances can be may be seen from one example. Atoxyl is a cure for syphilis like salvarsan, yet atoxyl is no longer used because it dissolves in the tissues of the eye and causes optic neuritis and atrophy, an effect which is not produced by either salvarsan or inorganic arsenic. After administering atoxyl to animals, arsenic is found in the humours of the eye, but no arsenic is present after administration of the other two substances.

Two groups of organic compounds are especially remarkable for their chemotherapeutic action on bacteria. Quinine is the methyl ether of cupreine, and it can be reduced by nascent hydrogen to form hydrocupreine. The following

* The address was given to a meeting of the Tuberculosis Society at Cambridge on April 2nd.

table shows the effect of two derivatives of hydrocupreine in arresting the growth of certain micro-organisms.

	Ethyl Hydrocupreine (Optoquin).	Iso-octyl Hydrocupreine (Vuzin).
Diphtheria	1 in 100,000	1 in 750,000
Pneumococcus	1 in 400,000	Negligible
Staphylococcus	1 in 500	1 in 16,000
Streptococcus	1 in 1,000	1 in 80,000

The action of optoquin on the pneumococcus and of vuzin on *B. diphtheriae* is absolutely specific; the higher and lower homologues do not exhibit this effect. Further, these drugs act in the animal body as well as in the test tube, and enough can be given by medicinal doses to animals and men to clear the blood from these micro-organisms.

Acridine Derivatives.

The second group of drugs which exert a marked action on bacteria are certain derivatives of acridine. Trypaflavine was used during the war for infected wounds; it acts better in the presence of protein, but is not sufficiently selective or specific on micro-organisms in the presence of body tissues to be of any real value; it is easily absorbed and causes oedema. Rivanol is a more recent derivative of acridine. Morgenroth cured streptococcic infections in mice by injections of rivanol under the skin. The injections, to be efficient, must be made soon after infection and in the neighbourhood of the inoculated zone; rivanol will not cure a blood infection. Still its discovery is a great advance over any substance previously available, and we can look forward with some confidence in the near future to the introduction of new derivatives which will destroy acute infective agents.

The chemotherapeutical substances which are known to act on bacteria are without value in tuberculosis. Thus flavine and its silver salts do not influence the tuberculous process in living animals, and the same is true of the quinine derivatives which have been prepared so far. The destruction of the tubercle bacillus presents two special difficulties: (1) in the fatty and protective envelope surrounding the bacillus, and (2) in the small blood supply to the tuberculous lesions.

Cerium.

Success, however, has been claimed for several metallic compounds, and I shall confine my remarks to three of these. The first is with cerium salts. Frouin experimented with fifty rabbits and thirty guinea-pigs; they were inoculated with bovine tuberculosis and treated by injections of cerium sulphate. All the animals died, treated as well as controls, but the treated animals survived from two to five months longer than the controls, and in *post-mortem* examinations showed considerable growth of fibrous tissue in the tuberculous lesions. Grenet and Drouin tried the effects of cerium earths in chronic tuberculous affections in patients. They state that two facts have been established—that these metals reduce the fats of the tubercle bacillus in cultures, and that they produce a mononuclear leucocytosis. Their procedure is to inject intravenously 2 to 5 c.cm. of a 2 per cent. solution for twenty days; this is succeeded by a period of rest for fifteen or twenty days, followed by a second and third series of injections. The patients improved in every way. The bacilli disappeared from the sputum, or if present were modified. Thus three of four guinea-pigs were inoculated with the infected sputum of treated patients; the guinea-pigs became sick and lost weight for two weeks, but at the end of two months they were normal again. These observers think the treatment of value only in afebrile cases. Renon and Esnault and Brou have confirmed these results, and also agree that in febrile cases the treatment is unsatisfactory. If cerium salts, including its allies, exert any action on tuberculosis it cannot be by direct action on the bacilli, since these salts and their compounds have little more direct action in killing the tubercle bacillus than potash salts. According to the figures given, the inhibitory action is about 1 to 5 parts in 1,000 to prevent growth. On the basis of this slight inhibitory effect in cultures—and, what is perhaps more important, the production of leucocytosis—a small number of cases of human tuberculosis have been treated with cerium salts by repeated intravenous injections, and the patients have improved; but there is no mention of control patients given the same general care, without the salts. The evidence so far presented, however, is of little real significance. The fact that cerium has still its devotees in France is perhaps of some importance.

Copper.

Copper salts have had a great boom in the past, though they have, at least for the time, lapsed into oblivion. Luton, in 1894, in a monograph, first drew attention to copper as a specific in tuberculosis. Grafin v. Linden and her colleagues in Germany produced a complex copper lecithin compound of secret composition; it was alleged to produce wonderful results in the treatment of patients. It is now more than twelve years since the introduction of this compound, and yet there is an alarming spread of tuberculosis in Germany, and since the war we hear little of the cure. Koga, in Japan, soon after v. Linden, produced cyanocuprol as a cure, but Koga's discovery has not settled the tuberculosis problem in Japan. The Japanese are very active in tuberculosis remedies; they have made many new compounds, sometimes of copper, sometimes gold, and sometimes other substances; but their tuberculosis does not diminish.

When the copper treatment commenced nearly all the reports were favourable to its use (Meissen, Strauss, etc.), but more extended investigations on animals made with the sulphate, oleate, albuminates, cyanocuprol and others have established the fact that so far as these salts are concerned the treatment, at all events on animals, is valueless. Schroeder, in particular, is definite that the copper treatment serves no useful purpose. Nevertheless, experiments with the putrefactive bacilli *Proteus vulgaris* and *Clostridium fetidum* show that copper salts are very strongly antiseptic; even when present to the extent of 1 in 2,000,000 a perceptible action is observed. Copper salts might be useful remedies in diseases characterized by increase of the number of putrefactive bacilli in the gastro-intestinal canal, particularly as they are not absorbed. They are also very active against the tubercle bacillus *in vitro*. Eggers showed that the influence of copper upon tuberculous tissues is strictly limited to a local effect; a deep and distant action is not obtained. On account of the increased susceptibility of the vascular nervous system around tuberculous tissues the action of the copper is greater in these than in normal tissues. He could not confirm von Linden. He states that true affinity of the copper for tubercle bacilli does not exist, nor could he find an affinity for tuberculous tissues; finally, the copper treatment of tuberculosis is not considered to be a specific therapy.

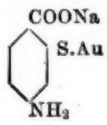
Gold.

The last drug about which I propose to speak is the gold treatment. Koch showed that $KAuCy_2$ (1 in 1,000,000) prevented the growth of tubercle in cultures; the presence of blood serum interfered with the action and reduced the efficiency to 1 in 25,000. Gold chloride inhibits when in dilution of 1 in 2,000,000; and yet, in the careful studies of De Witt, as in the earlier observations of Koch, it exerts no favourable influence on tuberculosis in animals.

Without reviewing the various papers dealing with this subject, I will sum them up by saying that the results of administering gold salts in tuberculosis were not better than those given by copper, whether on cultures of the tubercle bacillus, on tuberculous animals, or on patients.

Aurocantan was next introduced; it is a cantharidin-ethylene diamino-aurocyanide, and was soon found to be too toxic for use. It was succeeded by a compound with a very promising composition, "krysolgan," introduced by Feldt. This compound prevents the growth of the tubercle

bacillus in cultures in 1 part in a million. Nevertheless, animal experiments with this substance are not very promising, though clinical results, as published in Feldt's monograph in 1923, are certainly both hopeful and inspiring.



KRYSOLGAN (?)

The last of the gold cures is that recently introduced by Moellgaard.* It is a double thiosulphate of gold and sodium, $Au(S_2O_3)_2Na_3$, which, although a well recognized substance, he calls sanocrysin. Like its predecessors it retards growth of the tubercle bacillus in glycerinated bouillon in such strengths as 1 part in a million, but how serum added to the cultures affects its action I did not discover. Nevertheless, this is a very important point, since such chemotherapeutic substances as exert an undoubted action on bacteria invariably act better in the presence of the tissue fluids. Moellgaard assumes that his gold injections destroy the tubercle bacillus *in vivo*, and states that doses which are not poisonous in themselves kill the tuberculous animal by producing a tuberculin shock. This shock begins with albuminuria and sometimes haematuria; it is followed by toxic myocarditis and pulmonary oedema. Non-tuberculous animals do not exhibit this shock.

The evidence to prove this important point is nowhere clearly set out—that is, that the shock in tuberculous animals after an injection of sanocrysin is due to the destruction of tubercle bacillus and the setting free of endotoxins, which act as tuberculin acts on tuberculous animals. To combat this shock Moellgaard recommends a previous injection of antitoxic serum, after which his gold cure may be injected with impunity. It would be interesting to know whether other metallic poisons cause a like shock.

Moellgaard made many experiments on calves, rabbits, and other animals to test his sanocrysin, and the treated calves certainly did better than the controls, and some of them recovered. His procedure was as follows: He injected a number of animals on the same occasion; after some days the animal which seemed least affected was chosen as a control. Dr. A. S. Griffith thinks that this was wrong, since the calves may have been infected before they were used for experiment. The injection of the tubercle bacillus would cause those which had acquired some increase of resisting power as the result of a spontaneous infection to react violently for perhaps a week, while the really susceptible animals would remain unaffected; one of the latter would be selected as the control. It is true Moellgaard made tuberculin tests when the animals were three weeks old, but their weights show that they were much older when injected. The experiments of Dr. L. Cobbett at Stansted under the Royal Commission showed that, in spite of ideal conditions and constant care, it was impossible to exclude spontaneous infection.

Another feature of importance in these experiments is that the cultures used were attenuated. The doses necessary to kill were enormous and many control animals failed to die or contract severe disease. The attenuation of the bacilli makes recovery much easier and the large size of the dose intensifies the severity of the reaction to injection in an animal already infected.

So far as I am able to judge of the value of the recorded experiments, they are suggestive, but certainly not conclusive. Some of the krysolgan and copper experiments on animals have been equally suggestive, and with regard to the patients it is early to draw conclusions; it is the opinion of those best able to judge that clinical records of treated patients must be kept for years before the true value of a remedy for tuberculosis can be gauged.

Sanocrysin, then, is still on its trial.

*A paper by Professor Moellgaard on the theoretical basis of the sanocrysin treatment of tuberculosis was published in this JOURNAL on April 4th (p. 643).—Editor, BRITISH MEDICAL JOURNAL.

Lumleian Lectures
ON
SOME FORMS OF VOMITING IN INFANCY.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, MARCH-APRIL, 1925,
BY
H. C. CAMERON, M.D.CAMB., F.R.C.P.LOND.,
PHYSICIAN IN CHARGE OF THE DEPARTMENT OF DISEASES OF CHILDREN, GUY'S HOSPITAL.

LECTURE II.—VOMITING DUE TO OBSTRUCTION FROM NEUROMUSCULAR INCO-ORDINATION.

Etiology.

I COME now to consider the etiology of the second form of obstruction, that which depends primarily upon neuromuscular inco-ordination. The beautiful experiments of Bayliss and Starling have made clear the method by which a bolus of food is moved along the intestinal lumen. Excitation by the bolus produces a twofold reaction in the muscular tube—contraction in the segment above accompanied by relaxation in the segment below. The bolus, urged forward by the contracting muscles into the area of relaxation, thus evokes a succession of peristaltic waves which hurry it along the bowel. These peristaltic movements persist in an isolated loop of gut separated from its central nervous connexions. Nevertheless, the intestine is possessed of a double nerve supply which has the power of augmenting or of inhibiting intestinal tonus and movement. The inhibiting fibres pass in the splanchnic nerves and peripheral stimulation produces cessation of movement and relaxation of tone. Stimulation of the vagus is less uniform in its effect, but most often after a short period of inhibition there follows a long phase of unusual activity of movement, and at times the gut may be so contracted as to obliterate its lumen.

Little is known of the localization of the cerebro-spinal centres of these two antagonistic sets of fibres. The centre for the inhibitory fibres is generally thought to lie in the spinal cord, in the upper dorsal and lower cervical regions. Yet Ott obtained inhibition by stimulating the optic thalami and cerebral peduncles. Budge and Valentin showed that intestinal movements could be excited and amplified by electrical stimulation of the corpora quadrigemina and corpora striata. Bochfontaine in Vulpian's laboratory obtained movements of the intestines of dogs by stimulating certain parts of the motor cerebral cortex. Our knowledge of the paths by which the higher centres influence the intestinal movements remains, however, doubtful, fragmentary, and contradictory. That emotional states are habitually accompanied by changes in the amplitude and frequency of intestinal movements is everyday experience. Cannon found that motor activity in the stomach and intestines of his cats lessened when the animals became excited or angry. Barclay, in studying the gastric tone and movement in normal individuals, describes the striking alterations produced by an unexpected stimulus such as a loud sound.

In considering the etiology of this group of disorders in infancy, characterized by a temporary failure of the inhibitory apparatus of the bowel, I put forward the hypothesis that in development the inhibitory apparatus is apt to lag behind the motor and augmentary apparatus. That at this early age we have to deal with an organism in which the inhibitory activities of the splanchnic nerves are functionally weak is suggested by a variety of considerations. It is perhaps to be expected that the supreme function of inhibition shall be that which is last acquired. In the case of the skeletal musculature a similar functional retardation of inhibition is the rule. The newborn infant, before the myelinization of the pyramidal tracts, is rigid and spastic in all its movements. Until the cortex awakens and assumes control the infant is in a state of what might be called physiological diplegia. Only gradually does the power develop to relax antagonistic groups of muscles and to permit precise and effective voluntary movement.

It is interesting in this connexion that many observers have noted that hypertonus of the skeletal musculature is commonly more than usually marked in infants with congenital pyloric stenosis. Putzig has called attention to opisthotonos as an occasional symptom in hypertrophic pyloric stenosis. Feer has emphasized the characteristic set look of the facial muscles, showing especially in the wrinkling of the forehead. Certainly, in my experience, infants with hypertrophic pyloric stenosis, at least in the earlier stages, are more than usually tense, alert, and eager, with rigid limbs, exaggerated tendon reflexes, and clenched fists.

In certain degenerative disorders of the cerebrum we again meet with an increase of tonus in the skeletal muscles, with rigid limbs and stiff postures, and in such cases spastic states of the bowel musculature seem also unusually common. Here, as in many other conditions, there is a certain similarity between the results of functional weakness in the immature nervous system and disturbances directly due to degeneration and disease. In ascent and in descent, in development and in degeneration, the same country is traversed.

Thus I have at the present time a boy under my care in Guy's Hospital, 2 years of age. He belongs to a family more than one member of which has died of some obscure nervous disease in early childhood. In at least one of these it is known that optic atrophy was present. He is suffering from an unusual form of diffuse cerebral sclerosis, probably familial. Ophthalmoscopic examination shows the presence of optic atrophy, but no cherry-red spot such as is characteristic of amaurotic family idiocy. There is extreme rigidity of the limbs with pronounced opisthotonos. Through the rigid abdominal walls great waves of intestinal peristalsis are visible. There is extreme constipation. No motion is passed spontaneously, but by washing out the rectum hard scybalous masses are removed from time to time. The colon is hypertrophied and can easily be felt through the abdominal wall. I show its outline as seen after an opaque meal, and after an opaque enema.

FIG. 1.—Radiograph of adult stomach showing the shadow of the duodenal cap, a gap representing the pyloric ring sphincter, and the shadow of the lumen of the pyloric cylinder.

In this case it is clear that in an older child with cerebral degeneration hypertonus of the skeletal muscles and hypertonus of the intestinal muscles have developed together. In both the power of inhibition has been lost. I suggest that in the newborn infant, while a large part of the cerebrum is as yet functionless, there may at times be added to the lack of inhibition of skeletal musculature a similar weakness of the power to inhibit the splanchnic musculature. In the newly born, no doubt, the functional disturbance is often trivial, shading off by all gradations into the normal, and transient. In the similar conditions of later life the disturbance is often both severe and persistent. Of infantile achalasia at the cardia and pylorus it may be said that the time limits of the obstruction appear definite. In the case of the pylorus, certainly, if the infant does not succumb to intercurrent infection, recovery may be confidently predicted in the fourth or at latest the fifth month. The high mortality of this disease in the past has been due, not to the severity of the obstruction as such, but to the peculiar inability of the infant to withstand inanition and to the great fall in immunity which the inanition causes. Once the functional weakness at the pylorus has been overcome relapse never occurs. This certainty and this permanency of recovery are in keeping with the view that the symptoms are due to a retardation of functional development.

The failure of inhibition is, as might be expected, most evident at the site of the various sphincters, at the cardia, notably at the pylorus, at the ileo-caecal valve, and at the ano-rectal sphincter. We owe to our President, I think, in the case of the cardia, the first enunciation of the conception that in a failure of relaxation of the ring muscle of the sphincter we have the primary cause of the obstruction. In 1896 Rolleston showed at a meeting of the Pathological Society a number of specimens of oesophageal obstruction, and put forward this hypothesis. More recently the radiographic studies of Hurst have afforded the proof of the correctness of the supposition, and he has coined the word "achalasia" to describe the condition. Under the *x* rays the failure of the cardia to relax is clearly evident, while *post-mortem* examination in these cases shows that, although there is hypertrophy of the walls of the dilated oesophagus above the obstruction, the ring muscle itself shows no trace of hypertrophy.

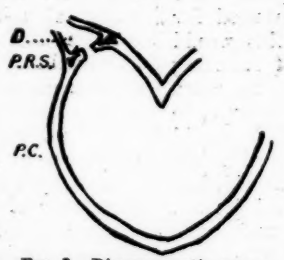


FIG. 2.—Diagrammatic representation of Fig. 1. D, Duodenal cap. P.R.S., Pyloric ring sphincter. P.C., Pyloric cylinder.

A. PYLORIC OBSTRUCTION.

The explanation of the remarkable condition found in hypertrophic pyloric stenosis has been the subject of endless controversy. Armstrong in 1777 was probably the first to describe a case. In 1888 Hirschsprung of Copenhagen called the attention of the profession to the condition, describing the clinical symptoms with great accuracy, but erroneously regarding the cases as examples occurring in infancy of that congenital pyloric stenosis of Landerer and Maier described in the last lecture. The view that the obstruction at the pylorus is due to pressure from the bulk of muscle, the subject of a congenital hypertrophy, seems to me to have little to recommend it. Indeed, no true stenosis of the pyloric canal is present. Within the grip of the rigid musculature of the pyloric cylinder there lies a normal pyloric canal, its lumen in no way narrowed, but, as it presents itself at autopsy, so folded up that its outline is star-shaped or rosette-shaped upon transverse section. During life it is clear that the obstruction is not constant but intermittent. Hess and others have experienced little difficulty in passing a duodenal catheter even in the most severe case. During an operation, after the stomach has been opened, bougies of relatively large calibre can be readily passed from stomach to duodenum. There are several instances recorded (Strauch and others) in which foreign bodies of considerable size, accidentally swallowed during life, have been passed per rectum without difficulty.

We owe to Thomson the first enunciation of the more reasonable hypothesis of neuromuscular inco-ordination, against which the chief objection urged by Finkelstein, Marfan, and others is that it is difficult to understand why spasm and overaction of a sphincter should give rise to hypertrophy upon so great a scale. In the light of our knowledge of the corresponding neuromuscular obstruction at the cardia, which we owe chiefly to Hurst, it would seem tempting to consider the hypothesis that we have here to deal with what he has named an achalasia—that is to say, with a primary failure of the pyloric sphincter to relax. In spite of Hurst's refusal in a recently published paper to accept this view, I venture to think that no other hypothesis fits so well with the facts as we know them.

If we examine a radiogram (Figs. 1 and 2) of the stomach and duodenum—and, since unfortunately in infancy the duodenal cap is never apparent as a distinct shadow, it becomes necessary to use a radiogram from an adult—we find the component parts well marked. The cardiac part of the stomach functions as a reservoir; the pyloric portion forms the so-called contractile cylinder. The pyloric portion of the stomach is described as consisting of a first part, the pyloric vestibule, which is

in general relaxed with a widely patent lumen, and the pyloric antrum (His) or the pyloric cylinder (Cunningham), the lumen of which in adults is also often widely patent, but which in the foetus and young infant after death is always obliterated by the rigid contraction of its thick muscular walls. The lumen of this pyloric cylinder is the pyloric canal. Radiographically between the duodenal cap and the shadow of the stomach adjoining is a gap less than 1/4 in. in length, traversed from time to time or continuously by a thread-like shadow. This gap represents the true pylorus occupied by the pyloric ring sphincter.

Now when we speak of a condition of congenital hypertrophic pyloric stenosis it seems to me that we employ a term which perpetuates at least three misunderstandings. In the first place, as has been said, there is no true stenosis present, only an infolding of the lumen when the hypertrophied walls of the pyloric cylinder are in a state of rigid contraction. In the second place, it seems to me that the hypertrophy certainly involves a great deal more than the true pylorus—that is, the pyloric ring sphincter. Indeed, I hope to produce histological evidence which goes to show that the ring muscle itself takes no part in the hypertrophy, but remains unchanged in its dimensions. The great hypertrophy is disposed along the whole length of the pyloric cylinder (Fig. 3), and extends to, and involves, the vestibule as well, gradually diminishing as the cardiac reservoir is approached. The tumour formed by the hypertrophied walls of the pyloric cylinder in the infant measures on an average about 1¼ in. in length. If we are to assign all this length of hypertrophied muscle to the retaining mechanism of the stomach rather than to the expelling mechanism—

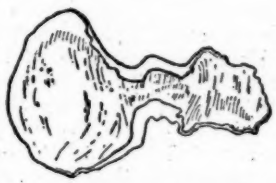


FIG. 3.—Outline of specimen of hypertrophic pyloric stenosis showing the duodenum to the right, the cardiac reservoir to the left, and the thick-walled contractile cylinder between.

by the hypertrophied mass hardens and softens under the examining finger as each wave of peristalsis reaches it and fades away. This seems to me strange behaviour on the part of a sphincter, though readily understandable if the hypertrophy involves the walls of the contractile cylinder of the stomach and if the hypertrophied muscles are in intermittent contraction, endeavouring to force the contents of the stomach past an obstruction caused by the failure of the pyloric ring muscle to dilate.

Cunningham in his classical paper has made clear the disposition of the muscular coats of duodenum, pylorus, and stomach in the normal infant at birth. The sphincter is a well developed mass of muscle much thicker than the muscle of the wall of the rest of the pyloric cylinder. Into it passes the greater part of the longitudinal muscle fibres of the stomach coats spreading out within it as a fan-shaped fasciculus. It is this turning in of the longitudinal fibres which will enable us to identify the pyloric ring muscle proper in sections through the immensely hypertrophied muscles in so-called hypertrophic pyloric stenosis.

Cunningham, further, has a drawing of the muscular arrangement in the cat in which the sphincter proper is considerably more developed. This is of interest in view of Cannon's radiographical studies, which were carried out almost entirely on cats and which constantly show a widely dilated pyloric canal right up to the actual pylorus. Lastly, in a section which he shows through the muscle in a case of hypertrophic pyloric stenosis, it will be seen that the ring muscle is considerably less thick than the muscle of the pyloric cylinder behind it.

To compare with these illustrations from Cunningham's paper I show first a section through the pyloric region

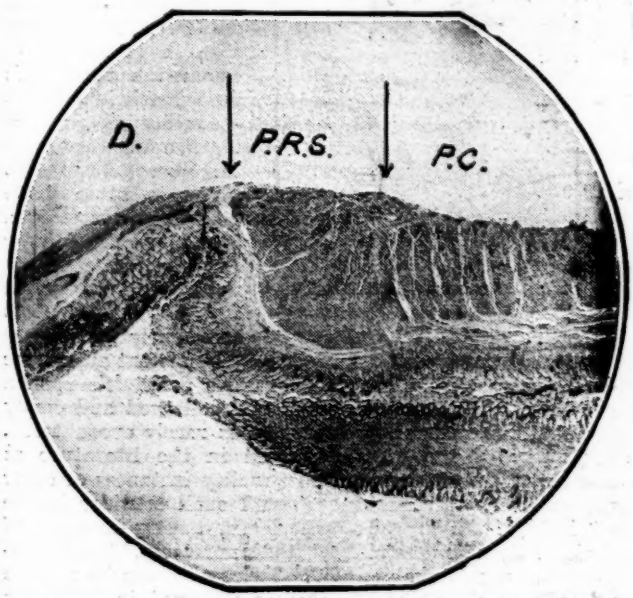


FIG. 4.—Section through the pyloric region of a normal infant, aged 4 weeks. D, Duodenum. P.R.S., Pyloric ring sphincter. P.C., Pyloric cylinder.

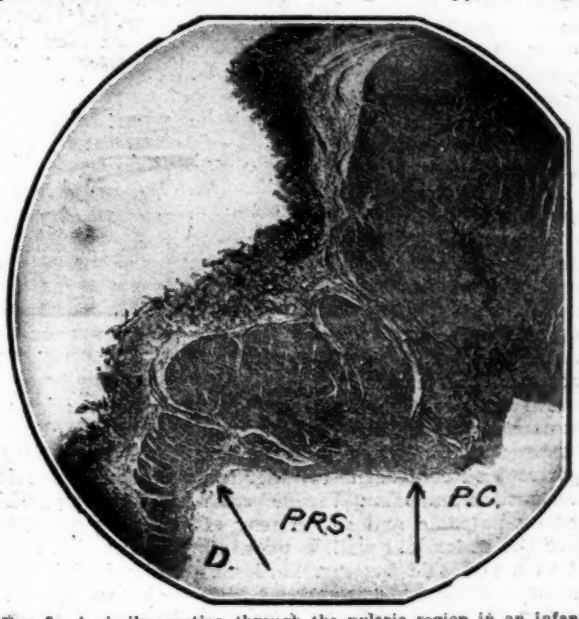


FIG. 5.—A similar section through the pyloric region in an infant with hypertrophic pyloric stenosis. D, Duodenum. P.R.S., Pyloric ring sphincter of unchanged dimensions. P.C., Pyloric cylinder with greatly thickened musculature.

that is to say, if we are to regard it as a greatly hypertrophied sphincteric area of unusual length—the gap between stomach and duodenum would be radiographically represented by an hiatus, not 1/4 in., but 1¼ in., in length. It is unfortunate that the absence of the duodenal cap in infants prevents this gap from being appreciable or measurable. It seems to me that a study of the *post-mortem* appearances shows clearly enough that the hypertrophy involves the whole contractile cylinder, which alone has peristaltic activity and the property of projecting the food forcibly through the narrow pylorus into the duodenum. Only the cardiac portion, which functions as a reservoir and which shows not peristalsis but peristole, escapes or almost escapes hypertrophy. In life nothing is more remarkable than the way in which the tumour formed

of a normal infant, aged 4 weeks (Fig. 4). Again the ring muscle is much the thickest part and can be clearly identified by the turning inwards of the longitudinal fibres. In the next slide (Fig. 5) we see the condition in hypertrophic pyloric stenosis under the same magnification. The sphincter, identified as before by the passing inward of the dilator longitudinal fibres, which are here very considerably hypertrophied, is now very much thinner on cross-section than the immensely thick wall of the pyloric cylinder which lies immediately to the stomach side of it. The last section, also from a case of hypertrophic pyloric stenosis, shows the same appearance, although in this case the sphincter muscle is overlapped by and appears almost imbedded in the hypertrophied muscle of the wall of the pyloric cylinder.

I think it may be said that the histological evidence is not opposed to the view that in hypertrophic pyloric stenosis we have to deal with an achalasia of the pyloric ring muscle and that the hypertrophy involves, not the sphincter, but the contractile cylinder—that it is a hypertrophy of muscle devoted, not to the retaining apparatus of the stomach, but to the expelling apparatus. If so, the histological evidence is in agreement with the macroscopic appearances and with the clear clinical evidence of peristaltic activity in the palpable muscle mass.

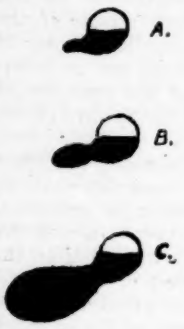


FIG. 5.—A, The normal stomach. B, In hypertrophic pyloric stenosis—an early case with slight enlargement of the contractile cylinder. C, In hypertrophic pyloric stenosis—a late case with great enlargement of the contractile cylinder.

The third mistake which is perpetuated in the commonly accepted name is involved in the description "congenital." If it is clear that there is no stenosis and no hypertrophy of the pylorus, it is equally clear that the condition is not congenital. Only one observer, Dent, has reported this condition in a foetus. I think it possible that he may have mistaken the very rigid and tightly contracted pyloric cylinder normal in the foetus for the pathological condition with which he was familiar. If the disorder were truly congenital, its frequency is so considerable that it is inconceivable that examples should not be forthcoming from among infants submitted to autopsy within the first weeks of life. In general the appearance of symptoms is delayed for some weeks after birth — usually from two to four weeks. Even when vomiting has begun and is persisting with all its characteristic violence, the evidence of hypertrophy is not immediately available. It appears only after an interval and steadily increases so long as the obstruction persists unchanged. The contractile phases are variable. Periods of exaggerated activity and increased peristalsis in the hypertrophied contractile cylinder are succeeded by periods of exhaustion and calm. Visible peristalsis, a stomach which is easily palpable and which may stand out prominently under the abdominal wall, a pyloric cylinder which can be felt as a veritable tumour, hardening and relaxing under the finger, are symptoms encountered only after some weeks of more or less persistent obstruction. The typical *x*-ray appearances, as shown diagrammatically in Fig. 6, also develop slowly. Fig. 7 shows the appearance on the fourth day after the first act of vomiting and on the fifteenth day of life. Clinically, no pyloric tumour was then palpable, and the evidence of visible peristalsis was slight. Radiographically the contraction cylinder is slightly enlarged with active peristalsis. Operation on the same day showed a moderate degree of hypertrophy of the muscular wall. Yet for four days preceding operation vomiting had been very violent, the weight had fallen rapidly, and the stools had become dark-coloured and slimy. In contrast with this early case, Fig. 8 shows the stomach, at the end of the fourth month of life, from an infant in which severe symptoms had been continuously present since the third week. In this case I had no operation performed, because it appeared likely, as indeed soon proved to be the case, that spontaneous recovery was imminent. The contraction cylinder shadow is enormously enlarged; the rest of the stomach of the normal size. I believe that in this photograph, which has caught the contractile cylinder in a phase of relaxation, we have outlined the enormous lumen which after death is completely obliterated, just as an autopsy may disclose a thick-walled bladder, tightly contracted, and without any considerable lumen, which during life was subject at times to enormous distension.

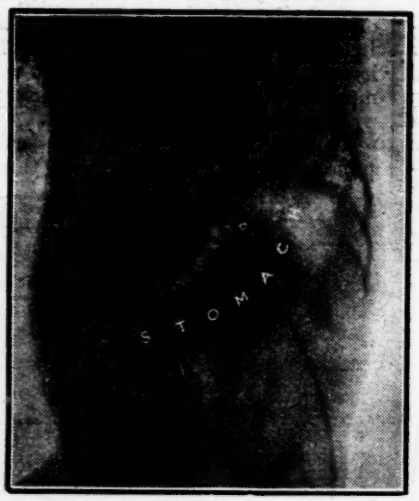


FIG. 7.—Radiograph showing slight enlargement of the contractile cylinder. From an early case.

FIG. 8.—Radiograph showing great enlargement of contractile cylinder. From a case of long duration.

In discussing the etiology of hypertrophic stenosis it is necessary to consider at the same time a group of cases in which obstruction at the pylorus is present in equal degree yet without hypertrophy of the contractile cylinder. The pyloric part of the stomach, instead of forming a cylindrical tumour of hard whitish muscle, is absolutely flaccid and shows no evidence of gross hypertrophy of its walls. Such cases are described as suffering, not from pyloric hypertrophy, but from pyloric spasm. Clinicians who have submitted to operation a large number of cases of pyloric obstruction in infancy almost without exception record the same experience. In a very small percentage of the cases the laparotomy discloses, not the expected hypertrophy, but its unexpected absence. Finkelstein, a most careful and acute observer, for long contended that a condition of persistent and almost complete closure of the pylorus without hypertrophy did not exist. Lately, as a result of an experience such as I have described, he has more than once expressed his altered view. He now regards the mistake as inevitable in a small proportion of cases. It is true that in very many, though not in all, cases with hypertrophy the pyloric tumour is readily palpable, but the separation of the two groups cannot be made upon the strength of this one point alone. Not only are there cases with hypertrophy in which the tumour is persistently impalpable —at times it is situated high under cover of the liver margin—but there is often little difficulty in feeling a normal pyloric cylinder in systole, provided that the abdominal wall of the infant is sufficiently lax.

Persistent and severe pyloric obstruction, with visible gastric peristalsis upon a great scale, with inanition stools and collapsed and empty intestines, yet without hypertrophy, is rarely encountered. Very many of the cases described in the literature as examples of pyloric spasm are in reality instances of other types of habitual vomiting, which I shall consider in the next lecture. In my own experience, among 32 cases of pyloric obstruction submitted to laparotomy, the hypertrophy was unmistakable in 30. Twice only was its absence disclosed. The first of these cases occurred in 1912, the second quite recently.

J. S., aged 7 weeks, was admitted to Guy's Hospital in November, 1924—a thin, eager, alert infant, with a striking degree of muscular rigidity. His weight at birth was not known; on admission it was 6 lb. 12 oz. The mother thought he had lost a great deal of weight. Throughout he had been breast-fed. During the first eleven days of life he had made satisfactory progress. On the eleventh day vomiting began, and had occurred without exception after every meal. The most careful questioning of the mother failed to shake her evidence on this point. The vomiting was violent and explosive in character. It never occurred during nursing, but always within half an hour, usually within a few minutes, after its completion. The infant was very restless, constantly crying, and ravenously hungry. For many weeks constipation had been extreme. By means of glycerin suppositories a little dark-green pigmented material had been removed every few days. In the ward gastric peristalsis was clearly visible, two or three waves being present simultaneously, passing from left to right across the epigastrium. The pylorus could not be felt. The state of the child was such that I asked Mr. Hughes to operate at once, expecting to find the usual hypertrophy of the pyloric cylinder on which a Rammstedt operation might be performed.

The stomach was large and distended, the pyloric end quite flaccid and free from any hypertrophy. The small and large intestines were alike collapsed, empty, and of strikingly small calibre.

Because of the clear evidence that a state of pyloric obstruction had long existed, I asked Mr. Hughes to cut through the pyloric ring musculature down to the mucous membrane but without prolonging the incision backwards on to the pyloric antrum, as in a Rammstedt operation. The true pyloric valve muscle and that only was severed. From the moment of section of the pyloric ring the child was never sick again. Feeding was begun at once, and the amounts given were rapidly increased. On the fifth day after the operation the child had three breast feeds in no way limited, and four feeds of a milk, water, and sugar mixture. The stools within twenty-four hours of the operation became normal in colour and consistency.

I do not wish to deduce too much from a single case, but the observations made upon this infant do very strikingly support the hypothesis that the symptoms were due to an achalasia of the pyloric valve, and that the distinction between pyloric hypertrophy and pyloric spasm is not fundamental, as, indeed, was always maintained by Holt in America. In both, achalasia of the pyloric ring muscle is the primary cause of the spasm and increased tonus of the gastric musculature. In all but a minority of the cases hypertrophy of the walls of the contractile cylinder of the stomach is gradually added as a secondary feature. It may be that the reason for the absence of hypertrophy in a few instances is to be found in the ease with which in these particular cases the food escapes through the cardiac orifice. In the case which I have just quoted the regularity and severity of the vomiting was quite unusual, and might have served to awaken the doubt as to whether hypertrophy was present. It is possible that hypertrophy is only produced when, as is more usual, the escape by the cardia is only achieved with difficulty, when the stomach retains its contents for many hours, and sometimes even for days, and when phases of violent and exaggerated peristaltic activity in the effort to overcome the obstruction are prolonged. After spontaneous recovery from all symptoms the pyloric tumour for long remains palpable, and the peristalsis may remain visible for months, or even years. Numerous autopsies upon children who had formerly suffered from pyloric stenosis have disclosed the persistent hypertrophy of the pyloric cylinder. Since hypertrophy often persists long after the cessation of all symptoms, and since symptoms of great severity and typical in character may occur without hypertrophy, it would appear necessary to presume the presence of a primary achalasia in all cases.

It remains to consider one further point. Will simple section of the pyloric ring muscle at once relieve the symptoms in a case with typical hypertrophy, or must the incision be prolonged backwards over the pyloric canal to sever the whole hypertrophied circular coat of the contractile cylinder?

I have hesitated to put this matter to the test in an individual case because it is clear that the vomiting is not due only to the failure of the pyloric ring muscle to open. The explosive character of the vomiting is determined, not by the pyloric obstruction alone, but also by the gastric hypertrophy and spasm. In purely organic stenosis the vomiting is never so violent, nor is there produced the picture of the spastic stomach with its outline clearly visible beneath the abdominal wall. Sometimes, indeed, the spasm extends to the pharyngeal muscles, so that during the height of the exaggerated gastric activity the infant may be unable to swallow. It is highly significant that there are a few autopsies upon record which have disclosed hypertrophy of the lower end of the oesophagus as well as of the contractile cylinder, presumably a combination of cardiac and pyloric achalasia. Thus, for example, Pritchard, in 1920, at the Royal Society of Medicine exhibited a specimen with hypertrophy of the lower end of the oesophagus, and hypertrophy of the "ileo-caecal sphincter" combined with hypertrophic pyloric stenosis. In this disorder of the innervation of the gastric musculature neither the failure of the pyloric ring muscle to open nor the spasm of the hypertrophied contractile cylinder above it is of itself sufficient to account for the symptoms. Both must be present at the same time. Both are parts of the same disturbance in the production of the synchronous contraction above and relaxation below which together make up the peristaltic wave. The presence of a sphincter in any situation in the bowel does not alter this primary relationship between contraction and relaxation, although functionally it may throw a greater emphasis upon the movement of relaxation. In this disorder of peristalsis it seems a mistake to lay emphasis solely on the excessive contraction or solely on the failure of relaxation. Both phases are involved. Only if we can imagine a peripheral stimulus going out from the ring muscle itself can we conclude that it would be sufficient to divide that alone in order to do away with the spastic contracture at the higher level. If this were to prove the case, then the Rammstedt operation, simple and successful as it is in the great majority of cases, would be still further simplified, because complete incision of the mass of hypertrophied muscle would no longer be needed and the risk of haemorrhage would be reduced to a minimum.

If it is tempting to hypothecate a uniform cause for all these infantile disorders marked by inco-ordination of the gastro-intestinal musculature and to regard all as accompanied by achalasia of the several sphincters, we must not at the same time lose sight of the difference between the local conditions prevailing at each site. Behind the pyloric sphincter, but not behind the cardiac, is a segment of the gut which has a highly evolved propulsive mechanism. Above the cardia, in achalasia of that sphincter, the hypertrophy is slight, perhaps even at times inappreciable, because the pressure within the oesophagus is low and the cardia opens in response to a minimal stimulus. In the oesophagus, as in the auricle of the heart after death, dilatation rather than hypertrophy is a prominent feature; in the thick-walled contractile cylinder of the stomach, as in the main propulsive chamber of the heart, the ventricle, it is the hypertrophy which is most obvious. It is possible that simple section of the ring muscle may suffice at the cardia, yet fail at the pylorus.

The view that the primary cause of the spastic obstruction of the pylorus is due to a primary hyperaesthesia of the mucous membrane with an accompanying excessive secretion of gastric juice seems disproved by the immediate success of the muscle-splitting operation. The secretory changes would appear to be secondary to the disorder of innervation.

B. Obstruction at the Ileo-caecal Valve.

At the ileo-caecal valve it appears likely that in early infancy a similar failure to inhibit the ring musculature is occasionally met with. In the following case an achalasia of the ileo-caecal valve was apparently combined with some degree of anal achalasia.

K. McD. was seen by me in Guy's Hospital on the ninth day of life. For the first three days after birth nothing abnormal had been noticed, although less meconium than usual had been passed. Vomiting began on the fourth day, and from the fifth day onwards had been continuous. The vomited matter was stained with bile. On that day, the fifth of life, he was admitted to hospital. An *x*-ray examination after a barium meal showed only a trivial delay of the barium in the duodenum. Within ten minutes it was seen in the jejunum. In the ward, between the fifth and the ninth days, when I first saw him, vomiting of bile-stained fluid had taken place on several occasions, but the most striking symptom was the obstinate refusal of the bowels to act, in spite of the prescription of various purgatives, such as hydr. cum cret., castor oil, and finally pituitary extract hypodermically. Enemata of soap and water had likewise failed of effect, until on the ninth day an olive-oil enema had produced the passage of a very small amount of yellow faecal material. Since the early passage of meconium in the first days of life nothing had been passed in the interval. On this, the ninth, day I saw the child. The abdomen was moderately distended, and there were visible peristaltic waves, apparently of the small intestine. On the twelfth day a second *x*-ray examination was made to ascertain what had become of the barium taken on the fifth day. I show the radiogram. The colon is considerably distended, although perhaps the distension is most apparent in that part which is empty of barium and distended only with gas. The dilated coils of small intestine distended with gas and containing a little barium are also apparent. Rectal examination showed nothing abnormal, but on exposing the abdomen the visible peristalsis in the small intestine was now very striking, the whole contour being broken into a series of ridges and furrows. The bowels were slightly open during this examination, and flatus was passed freely.

Confronted by this situation it was difficult to know how to act. Since the visible peristalsis appeared to be due to the small and

not to the large intestine, the diagnosis of Hirschsprung's disease appeared to be unlikely. On the other hand, the presence of the barium, so long stationary in the colon, appeared to exclude any obstruction in the ileum.

Since the general condition of the child had steadily deteriorated and much weight had been lost, at my request Mr. Steward performed a laparotomy. At once very greatly thickened and hypertrophied coils of small intestine presented in the wound. Much of small intestine had to be allowed to escape from the abdomen before it was possible to trace this hypertrophied gut to the neighbourhood of the ileo-caecal valve, where, at a point about one inch above the caecum, the calibre suddenly narrowed and the congestion marked above gave place to a paler colour. The caecum and first part of the ascending colon appeared considerably distended. There was no sign of obstruction by a band or by a diverticulum. With considerable difficulty the intestines were replaced and the abdominal wall sutured. The child at first seemed little the worse for the operation. Hypodermic injections of atropine sulphate gr. 1/500, at four-hourly intervals, were given without appreciable benefit. The bowels were open once after the operation, but the distension steadily increased, and the child died four days after the operation. No *post-mortem* examination was permitted.

The case can, I think, only be explained on the assumption of an achalasia of the ileo-caecal valve with secondary spasm and hypertrophy of the bowel above, combined with a similar, though less marked, achalasia of the anal sphincter. In the literature few similar cases have been described, at least in early infancy. I can refer only to the paper by Wilms on persistent intestinal spasm, and to an exhibit before the Anatomical Society of Paris by Gaikler and Nau of three foetuses, each with multiple spastic strictures of the intestine. I have notes of one other similar case seen with Mr. Hughes, in which the thickened small intestine was both visible and palpable. The baby was sent to me from the West Norwood Maternity Home on the fourth day of life, with bilious vomiting, abdominal distension, and extreme constipation. From the tenth day onwards recovery gradually took place.

C. Obstruction at the Anus and in the Rectum.

The etiology of Hirschsprung's disease, like that of hypertrophic stenosis, has been greatly discussed. Hale-White, Fenwick, and Hawkins in this country have upheld the view that neuromuscular inco-ordination in some particular segment of the bowel is responsible. Two groups of cases are described. In that which is most characteristic, and to which the name "Hirschsprung's disease" should perhaps be confined, the symptoms of absolute constipation and abdominal distension date from birth. There may be difficulty even in the passage of meconium. In a well marked case the symptoms are developed in a quite characteristic way before the child is more than a few days old. I show a photograph taken in the *post-mortem* room of an infant at one time under my care, who died on the tenth day of life in Guy's Hospital; also the photograph of an older child, aged 3 years. The great distension of the abdomen, through the wall of which the peristalsis of the hypertrophied colon was clearly visible, is well shown. Of the first case I was not able to get a satisfactory *x*-ray plate, but of the second case I show the shadow of the huge colon in its lower part outlined by means of a bismuth enema. The dilatation passes downwards to the anal sphincter itself. With such a shadow there can be no question of the dilatation and hypertrophy being a secondary result of obstruction by organic stenosis of the bowel or by kinks, acute angles, or spurs. In three other cases, which I have had the opportunity of examining in early childhood, the same picture—the extension to the anus itself—has been seen. It is clear that the cause must be found in a failure of relaxation in the anal sphincter. In other cases the achalasia may affect the other sphincters described by Keith in the rectum and sigmoid. Behring and Klercker have recently reviewed the literature and brought forward additional proof of the origin of Hirschsprung's disease in localized *Kontraktionsringen* with resulting secondary changes. In a second group of cases, which show the syndrome of Hirschsprung's disease, the origin is probably different. As a rule, the onset of symptoms is delayed until later life. Many show acute angular kinks of the colon, with adhesions between adjoining loops of the bowel or with the lumen, large as it is, partially occluded by infolded spurs or valves. These doubtless are secondary effects resulting from many causes and perpetuating the obstruction. It is possible that some cases which in early infancy were examples of anal or rectal achalasia with secondary hypertrophy, distension, and elongation of the colon, may pass gradually into the second category, and that the symptoms may be perpetuated by secondary organic obstruction due to acute kinking of the bowel with spur formation long after the infantile lack of co-ordination has been overcome. In other adult cases achalasia may be the result, not of developmental delay as in infancy, but of degenerative changes in the central nervous system involving the higher central connexions of the inhibitory paths. In the recorded cases a disproportionately large number appear to have been encountered in idiots.

D. Obstruction at the Cardia.

Beck and Göppert have both described carefully observed cases of temporary dysphagia in infants due to so-called "cardiospasm."

In Beck's case the infant was a male, aged 3 months. The regurgitation of milk in an unchanged condition, and quite unmixed with stomach contents, was the main symptom. Milk introduced directly into the stomach was never vomited. The act of swallowing was clearly involved, and there was much gurgling and choking. A sound encountered an easily overborne obstruction 15 cm. from the gums. At the height of the disturbance there was a loss of weight of 400 grams. The disturbance lasted for two months, when complete and permanent recovery took place. In a second case, also reported by Beck, the duration was shorter—four weeks.

Göppert had a similar experience. In the first of his cases, however, complete recovery did not take place until the ninth month of life. Hess, in passing his duodenal catheter in newly born or very young infants, noted that there is not infrequently some slight obstruction, easily overborne, encountered at the cardiac orifice.

It is probable that in the infant whose diet is wholly fluid obstruction at the cardiac sphincter is too intermittent and too easily overcome commonly to give rise to persistent symptoms such as Beck and Göppert have described in exceptional cases. Persistent cardiac achalasia of adult type is not infrequently found in young children, but not, I think, in infancy.

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THE EFFECT OF ANTISYPHILITIC TREATMENT, AS GAUGED BY THE SIGMA REACTION.

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APART from their diagnostic value, the Wassermann reaction and the more recent flocculation reactions have assumed a position of importance as guides in the treatment of syphilis. It is well known that the blood and cerebro-spinal fluid may give a positive reaction long after the clinical signs of active syphilis have disappeared, and although Hess Thaysen[4] believes that in certain cases a positive reaction does not indicate active syphilis, it is very generally held that a positive reaction in the blood or cerebro-spinal fluid is a sign of active syphilis and therefore an indication for treatment (Boas,[1] Fordyce,[2] Osler and McCrae[3]).

In view, then, of the prevailing opinion that the ultimate goal of antisyphilitic treatment is a permanent negative reaction, it was proposed to investigate how far the present methods of treatment are effective in attaining this end, or at any rate in reducing the amount of reacting substance in the blood during a certain period of observation. In order to carry out this investigation, it was clear that the blood of each patient would have to be examined at fairly frequent intervals, and that the results of the examinations would have to be quantitative and comparable with one another. In the opinion of the authors (Dreyer and Ward[5]) the Sigma reaction gives more strictly comparable results than the quantitative Wassermann reaction. Madsen,[7] Renaux,[7] Wyler,[7] and Houston[8] found the Sigma reaction quantitatively accurate. Madsen gives the result of titrating four syphilitic serums by means of the Wassermann reaction. Each serum was titrated fifty times, 200 titrations in all being carried out:

85	titrations	gave	0	per cent.	deviation from average.
85	,,	,,	±33	,,	,, ,,
20	,,	,,	±60	,,	,, ,,
10	,,	,,	±78	,,	,, ,,

In other words, the Wassermann reaction gave an average deviation of ±24 per cent.

At the same time 109 titrations were made on ten serums by means of the Sigma reaction, and the greatest deviation observed did not exceed ±6 per cent.

Hirzfeld,[7] however, found that the Sigma reaction does not give a sharp end-point, and he found it difficult to calculate the real strength of the serum. In the present investigation incomplete flocculation, of the kind observed by him, has not been a source of difficulty, the end-point of the titration being always well defined.

With regard to its sensitiveness and specificity Dreyer and Ward[5] stated in their original communication that the Sigma reaction had in their hands yielded results that compared more than favourably with the Wassermann reaction. The support given to this claim by subsequent investigators may be judged from the following comparative tests carried out by the International Health Organization of the League of Nations.[7*]

TABLE I.—*Diagnostic Results.*

Name.	Cases of Syphilis.			Controls.		
	No.	Wassermann Reaction Positive.	Sigma Reaction Positive.	No.	Wassermann Reaction Positive.	Sigma Reaction Positive.
		Per cent.	Per cent.		No.	No.
Dreyer *et al.*[6]	519	62.0	69.4	203	5	7
Madsen[7] ...	627	59.3	77.7	885	0	61
Harrison[7] ...	498	51.0*	57.8	244	14	20‡
Hirzfeld[7] ...	358	54.0	50.3	61	0	0
Müller[7] ...	1367	68.5	60.5	340	0	0
Renaux[7] ...	189	55.5	74.6	100	0	2
Sachs[7] ...	404	54.5*	51.5	576	3	3

* Including doubtful Wassermann reactions.
† Three of these cases later diagnosed as syphilis.
‡ Eleven of these cases later diagnosed as syphilis.

The Sigma reaction, then, seemed to lend itself very well to the kind of investigation that was contemplated—namely, the study of the quantitative changes that took place in the blood of syphilitic patients over an extended period of time.

PREVIOUS INVESTIGATION OF THE EFFECT OF TREATMENT, AS GAUGED BY FLOCCULATION REACTIONS.

Vernes[9] has devised two somewhat complicated methods for determining the flocculating power of the serum in cases of syphilis, the results being expressed quantitatively. He has further formulated certain rules for diagnosis and cure.[11] Lortat Jacob and P. Legrain[12] found Vernes's second method less sensitive than the Wassermann reaction, and the results of a comparative test by Vernes himself[10] indicate that his second method is less sensitive though more specific than the Wassermann reaction. The scale used by Vernes in expressing his results is so different from that used in the Sigma reaction that it would be difficult, if not impossible, to compare his results with those obtained by workers using the Sigma reaction. Houston and others[8] employed the Sigma reaction to study the effect of treatment in 170 cases of syphilis. They found: (1) that in general the Sigma units fell during treatment with arsenical preparations, when effective doses were used, and that a study of the results of the reaction gave considerable help in determining the effective dose and the effective interval between doses; (2) that the rate of fall in units in tertiary cases of syphilis was much slower than in primary and secondary cases; (3) that there was a certain amount of evidence that mercury, intramine, and potassium iodide have less effect than the arsenical preparations in lowering the Sigma units; (4) that a negative Sigma reaction does not necessarily mean that the case has been cured.

Stokes and Wigham[8] observed the effect of treatment on about fifty cases of syphilis, also by means of the Sigma reaction. They found that the primary and secondary cases, when treated at regular intervals with arsenic, showed a fairly steady and continuous fall in Sigma units; but among tertiary cases they did not see one react satisfactorily during the period of observation, the curve of Sigma units in the blood showing only ups and downs.

THE PRESENT INVESTIGATION.

In the present investigation the effect of treatment upon the Sigma units in the blood of 138 cases of syphilis was observed both during courses of treatment and during varying periods following these courses. The cases were in three clinics, and while in most of the cases the ordinary routine of treatment in the clinic was not interfered with, in certain special cases, through the kindness of the directors of the clinic, changes were made.

The majority of the patients received intravenous injections of novarsenobillon (N.A.B.) at weekly intervals, and the patients were also given mercury pills (Hutchinson's pill) with instructions to take two daily. A course of injections of N.A.B. was followed in some instances by a course of intramuscular injections of mercury (1 c.cm. of

* At the time of writing the above the results of the last League of Nations conference at Copenhagen at the end of 1923 were not available.[8] At this conference 526 serums were tested simultaneously by the different methods for the diagnosis of syphilis. The Wassermann reaction yielded a greater number of positive reactions than the Sigma reaction. This result was in striking contrast to the results previously obtained by the same workers, and was investigated by Dr. Mörck. He found that the Sigma reaction had been rendered less sensitive by three details in the technique: (1) the heart extract supplied had been given too low a factor of sensitiveness; (2) the serums had been inactivated in hermetically sealed tubes (that is, under pressure) instead of in tubes with a cotton-wool stopper; (3) the tests had been incubated in a semiclosed water-bath instead of an open one. In some cases this reduced the number of units by some 500 per cent. When these details had been corrected it was still found that the cases of dementia paralytica which had been treated with malaria were more active in the complement fixation than in the flocculation system. This phenomenon is being further investigated.

grey oil). In a few cases sulfarsenol and sodium silver novarsenobillon were used, as Harrison[13] has stated that these preparations gave encouraging results in cases with myocardial and nervous lesions.

In certain cases in which the arsenical preparations seemed to have little or no effect on the serological reaction, injections of mercury perchloride were given intravenously. The technique of Conrad and McCann[14] was followed, 1.2 to 4 c.cm. of a 1/2 per cent. solution of mercury perchloride in saline being injected. In order to prevent thrombosis of the vein, the patient's blood and the solution are mixed in the syringe before injection. They found that after from six to twenty-two injections, 64 per cent. of a series of sixty-two "Wassermann-fast" cases gave a negative Wassermann reaction. In the present series of cases it was only possible to give one injection a week, instead of twice a week as advocated by Conrad and McCann.

Technique and Experimental Variations of the Sigma Reaction.

The technique described by Dreyer and Ward[5] and supplemented[6] was followed throughout, the results being read after an incubation period of twenty hours.

The amount of experimental variation was investigated by testing portions of the same specimen of serum many times. The flocculation readings varied from day to day, but repeated themselves frequently, the mean deviation being 6.7 per cent., while the standard deviation was 9.5 per cent.

The cause of these variations was chiefly the fluctuations in temperature of the water-baths in which the inactivation of the serum and the incubation of the tests were carried out. An additional cause was the reading error of the different degrees of flocculation, and this was found to be greater in strong serums than in weak, small irregularities in the flocculation tending to occur in the high dilutions of the serum, probably owing to the small amount of protective serum-protein present.

In addition to the above, another cause of variation was noted. Two alcoholic heart extracts which had been used for a period of five months showed a sudden deterioration in the sensitiveness of their suspensions. The amount of this was determined, and the errors due to it were corrected. The sudden deterioration was probably due to the fact that these particular heart extracts had been prepared by making a more concentrated extract of the heart muscle than that described.[6] The other heart extracts used showed no change in sensitiveness, and the stability of the heart extract which was used during the greater part of the investigation was established by an extensive series of tests. Chart 5 shows a case which was followed over a period of fifty weeks. During this period the number of Sigma units found only varied between 5.0 and 4.1. This and similar cases confirm the belief that, despite experimental variations, the unit values obtained in testing a serum from time to time are really comparable. It remains to determine the limit of the experimental variation.

It was stated above that the standard deviation found was 9.5 per cent. In a series of determinations the probable error of a single determination is about two-thirds of the standard deviation—that is, 6.3 per cent.—and the probable *limit* of experimental variation would be approximately 20 per cent.[15] Accordingly, unless there was a 20 per cent. change in the unit value of a patient's serum, it was not considered to be a real change in the serum of that patient.

The number of Sigma units varied widely in different patients—from one unit to over two thousand units; and in order to correlate the results in different patients the changes in the Sigma units of a given patient were expressed in percentage.

Effect of Arsenical Injections.

I. *Upon Patients whose Blood gave a Negative Sigma Reaction before Treatment commenced.*

In this connexion, three questions arise:

1. Can the injection of arsenical preparations in definitely non-syphilitic cases induce a positive reaction in the blood? Strickler and others[16] administered one or more injections of neo-arsphenamin (neosalvarsan) to twenty-four patients in whom there was no sign of syphilis and who all had negative Wassermann reactions prior to the injections. Fourteen of these twenty-four patients—that is, 58 per cent.—gave two or more positive Wassermann reactions after the injections. Boas and Kissmeyer,[17] however, found that the injection of salvarsan or its derivatives into fifty non-syphilitic cases did not induce a single positive reaction. In the present investigation only one definitely non-syphilitic case received injections of arsenic, and the Sigma reaction remained negative.

2. Can the arsenical preparations light up a case of latent syphilis and change the reaction from negative to positive? There is a fairly widespread belief that in certain cases of suspected or latent syphilis with a negative Wassermann reaction the injection of a so-called "provocative" dose of arsenic will light up the syphilitic inflammation, and the blood of the patient will subsequently give a positive Wassermann reaction, confirming in this way the tentative diagnosis. In the light of the experience of Strickler and others,[16] this "provocative" Wassermann reaction must be treated with reserve. In the present study, three cases with a history of syphilis or a history of a positive Wassermann reaction in the past, but who had a negative Sigma reaction at the time the injections began, were given several doses of N.A.B. All three cases remained negative.

3. What is the prognosis of cases of primary syphilis which give a negative Sigma reaction at the commencement of treatment and remain negative during the course of treatment? Two such cases were observed, and they remained negative subsequent to the course of treatment. So far as this limited evidence goes the prognosis is favourable, thus confirming the evidence afforded in similar cases by the Wassermann reaction. In this connexion one case (Chart 1) is of interest. The case was one of suspected primary syphilis; spirochaetes were not demonstrated, but one week after treatment commenced 1.4 Sigma units were found in the blood. This figure, though not quite high enough to warrant a definite diagnosis of syphilis, aroused further suspicion, and the treatment was continued; the number of units fell to normal and remained there. The diagnosis must remain doubtful if (according to the scale laid down by the authors of the reaction[5]) an unknown case must have at least 1.5 Sigma units in the blood to establish the diagnosis. But, of course, in such a case it is much better from the patient's point of view to be on the safe side, and treat the case as one of syphilis, rather than suspend treatment and wait to see if the reaction becomes definitely positive.

II. *Upon Sigma-positive Primary Cases and Secondary Cases.*

In the course of the investigation twenty-two such cases were observed. These cases respond more uniformly to treatment than cases in the later stages of the disease, and the following points were noted:

1. In about one-third of the cases a rise in units was found just after treatment commenced. The units then fell. This preliminary rise must be regarded as the expression of the normal evolution of the disease, which has only been partially checked by the first injections of arsenic. Chart 2 shows the curve of a case of this kind.

2. The main response in these cases was a continuous fall in the number of Sigma units during the serial injections, the fall becoming slower as the number of units approached 1 (a non-syphilitic case may show as much as 0.9 Sigma unit in the blood). Chart 3 shows a typical response to regular treatment in this stage of the disease, in this case without any well marked preliminary rise in units. The rate of fall in the number of units is of interest. In nine primary and early secondary cases, one week after each injection, the number of units had fallen on the average to half the number of units present before the injection; on the other hand, in eight late secondary cases, one week after each injection, the number of units had only fallen on the average to two-thirds the number of units present before the injection. In other words, the rate of fall is definitely slower in the late cases in this group.

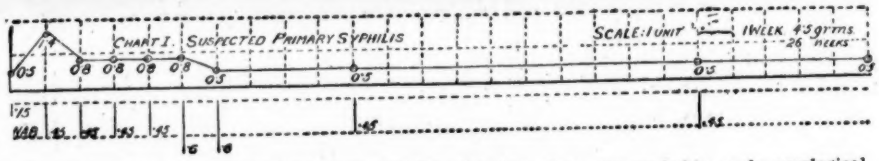

CHART 1.—Case of suspected primary syphilis, showing what are probably early serological changes and the response to treatment.

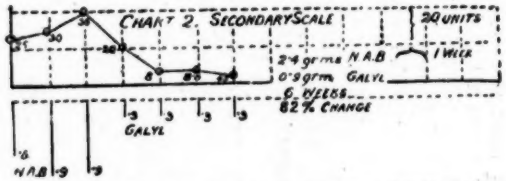

CHART 2.—Case of secondary syphilis, showing the abortive rise noted in about one-third of the early cases.

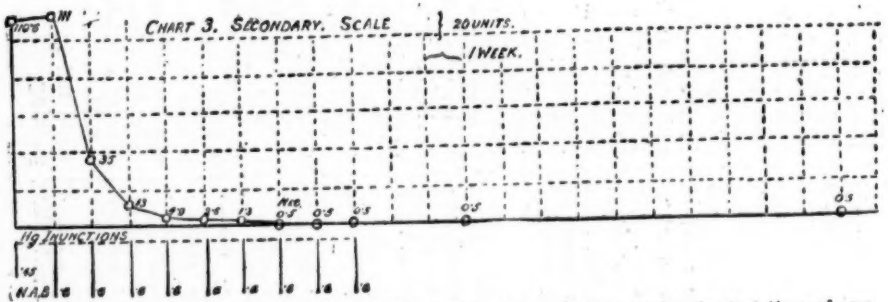

CHART 3.—Case of secondary syphilis. This case became negative in the shortest time of any early cases. Treatment was regular.

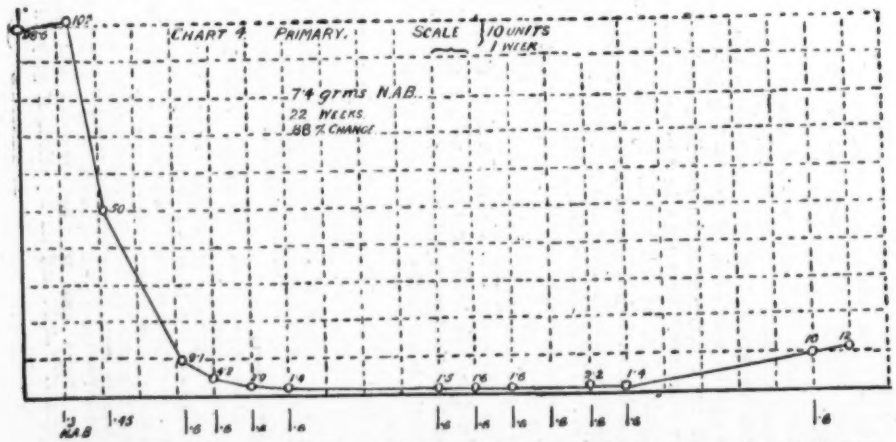

CHART 4.—Case of primary syphilis showing first a rapid fall with treatment, then stationary after a lapse and a rise after a second lapse.

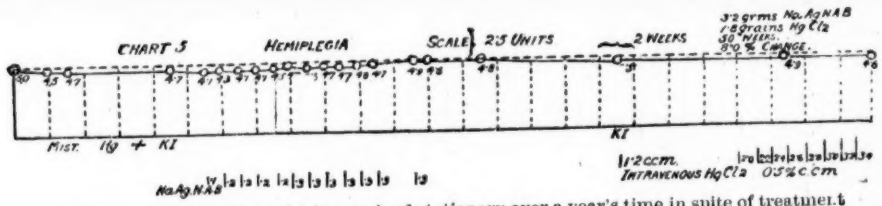

CHART 5.—A tertiary case which remained stationary over a year's time in spite of treatment.

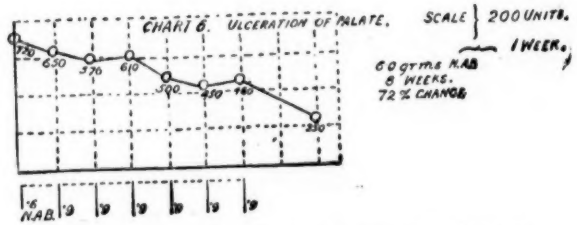

CHART 6.—A tertiary case which showed throughout the observation a continuous fall in units.

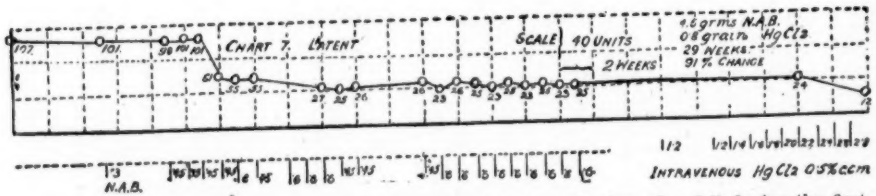

CHART 7.—A latent case which was stationary before treatment; showed a fall during the first course N.A.B., none during the second, and then showed a fall during the course of intravenous HgCl2.

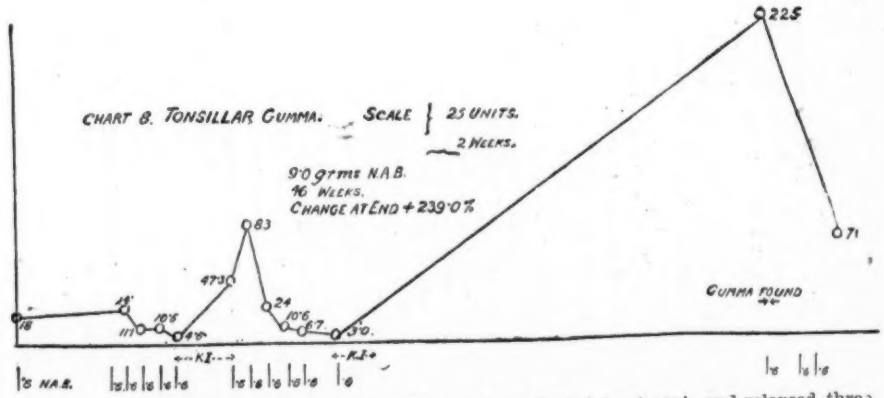

CHART 8.—A tertiary case which improved three times during treatment, and relapsed three times during non-attendance. The formation of a gumma occurred six months after a reading of only 3 units.

3. The evidence concerning the relation of the amount of N.A.B. received and the response by the patient is suggestive but not very definite, other factors coming in to obscure the picture. Eight cases became negative after receiving an average of 6.9 grams of N.A.B. (seven of these cases remained negative up to the end of the period of observation), while fourteen cases did not become negative after receiving an average of 4.4 grams of N.A.B. However, among the cases which did not become negative, there were three which received as much N.A.B. as the cases which did become negative. In these resistant cases, however, other factors, such as irregularity of attendance, incomplete treatment, came in.

4. It had been previously noted by Stokes and Wigham[6] that a break in the course of treatment might have a definitely prejudicial effect when treatment was resumed, the cases becoming resistant to arsenic, although previous to the break in treatment their units had been falling. In this series of cases there were four in which the Sigma units were falling steadily under treatment with N.A.B., and then there was a period of four weeks during which they received no arsenic. In two of these cases a further fall in units occurred when treatment was resumed, and one case eventually became negative. In the other two cases subsequent treatment seemed to have little effect, and indeed the units commenced to rise again after the cessation of the second series of injections with arsenic. Chart 4 shows the Sigma curve of one of these cases, and brings out very clearly the danger of breaking off the arsenical treatment of early cases before the blood gives a negative Sigma reaction. In this connexion Chart 4, showing the result of irregular and incomplete treatment, should be compared with Chart 3, where the course of treatment was regular and complete. If patients in the early stages of syphilis could be shown such charts as these it would encourage them to attend the clinic regularly for treatment. Patients in this stage of the disease are sometimes apt to regard themselves as cured when their active signs—sore, rash, etc.—have disappeared, and they attend irregularly in consequence. But if their intelligent interest in what is being done for them is aroused by charts such as these, they would be more likely to become regular attendants. The case represented by Chart 3 was shown his Sigma curve, and became keenly interested in the progress of his cure.

5. In seven cases, one injection of metallic mercury was given at the end of a course of arsenic injections, and a fall in units occurred after the mercury injection in all these cases. In four out of the seven cases the reaction became negative without further treatment. However, since in five out of the seven cases the mercury injection was given one week after the last injection of N.A.B., the fall in units cannot be ascribed entirely to the effect of the mercury. One case in the series became intolerant to arsenic when he still had 1.1 Sigma units in his blood. Six intravenous injections of mercury perchloride were given, and three weeks after the last injection his units had risen to 67. The evidence, then, as far as it goes, is in favour of the use of metallic mercury, but against the use of mercuric chloride in this stage.

III. *Upon Tertiary Cases.*

In the 106 tertiary cases which were investigated, the response to treatment was much slower and much less uniform than in the early cases. The following points were noted.

1. Out of the 106 cases three only became negative while under observation. The details of these cases are:

CASE I.—A case of latent syphilis which had previously received 16.2 grams of N.A.B. and nine injections of grey oil over a period of 156 weeks. At the beginning of the present treatment there were 1.7 Sigma units in the blood, and the reaction became negative after two weeks' treatment with 1.2 grams of N.A.B. Subsequent history unknown.

CASE II.—A case of angina which had previously received 16.2 grams of N.A.B. over a period of 130 weeks. At the beginning of the present treatment there were 3 Sigma units in the blood, and the reaction became negative after twenty weeks' treatment with 4.8 grams of N.A.B. Subsequently, injections of mercury perchloride were given, and the reaction was still negative at the end of a further period of nineteen weeks.

CASE III.—A case of glossitis which had previously received 6 grams of N.A.B. and six injections of grey oil over a period of forty-three weeks. At the beginning of the present treatment there were 1.8 Sigma units in the blood, and the reaction became negative after six weeks' treatment with 5.1 grams of N.A.B. Subsequent history unknown.

It will be noticed that these three cases had all received a good deal of treatment previous to the present investigation, and they all had a low Sigma unitage at the commencement of the present treatment.

2. In three cases there was a definite rise in units during the period of observation. In two of these cases there was definite clinical evidence of increased activity of the disease. Chart 8 shows one of these cases. In the remaining case there were no symptoms or clinical signs at all during any period of the observation. The evidence thus suggests that a rise in units is associated with an increased activity of the disease.

3. The remaining cases in this group apparently responded to treatment in three ways: (1) The number of units fell steadily during the period of observation. Chart 6 is an example of this type, which may be called the "falling" type of response. (2) The number of units remained practically unchanged during the period of observation. Chart 5 is an example of this type, which may be called the "stationary" type of response. (3) The number of units fell for a variable period and then remained stationary. Chart 7 is an example of this type of response, which may be called the "plateau" type.

These differences in response to treatment are probably more apparent than real. It must be remembered that the tertiary stage of syphilis is a very long one, and that these cases came under observation at different periods, after different treatment, and were only under observation for a time (at most two years), which was short compared to the length of the tertiary stage. It is probable from the evidence obtained in this investigation that, unless there are exacerbations in the disease, the amount of reacting substance in the blood in the tertiary stage remains practically unchanged over a long period. Sometimes the amount of this substance cannot be influenced by treatment—there were a certain number of cases which remained stationary although they had had no previous treatment. In the majority of cases, however, it can be reduced, but eventually takes up a new level which is uninfluenced by further treatment. In a small proportion of cases the reaction may become negative, but the conditions under which this occurs are obscure. Probably if a continuous fall to a stable negative is to be produced with any certainty it can only be accomplished by an extensive and prolonged effort, using methods more effective than those of the present investigation.

The point at which the amount of reacting substance in the blood becomes relatively stationary varies widely, although it is rarely above 50 Sigma units, and in the majority of cases below 15 Sigma units. There appear to be several factors which influence the level at which the units tend to become stationary, and these will now be reviewed.

(i) *Novarsenobillon* (N.A.B.).—This was used in the majority of cases. Three cases showed a rise in unitage, but of the remaining 90 cases approximately two out of every three cases showed some degree of fall in unitage. It may be remarked that the 58 cases whose units fell during treatment came under observation with a higher average unitage (131 Sigma units) than the average unitage (44 Sigma units) of the 32 cases which remained stationary under treatment.

Sodium Silver Novarsenobillon (*NaAgN.A.B.*).—This was used in 6 cases with nervous lesions and one other case whose chart is shown—Chart 5. Here there was no change in units, although 3.2 grams were injected in all. Of the 6 cases with nervous lesions, the units were reduced in 4 cases, but 1 case remained stationary, and 1 case showed a rise in units. This result, however, may be considered more satisfactory than the result of treating cases with nervous lesions with N.A.B., where, of 9 cases, 3 only showed a fall in units and 6 remained stationary.

Sulfarsenol was given in 5 cases only, and although the units fell in 4 cases out of 5 the reduction was not very striking.

Mercuric Perchloride.—Intravenous injections were given to 24 cases, in all of which the number of units had been stationary for some time before this method of treatment was begun. Each patient received approximately 0.1 gram of $HgCl_2$ in all, spread over about ten injections. In 13 cases the number of units remained unchanged, and in 11 there was an average fall of 25 per cent. in the unitage. This result is apparently not so good as that claimed by Conrad and McCann,[14] who, however, gave their injections twice instead of once a week and gave more injections than were given in this investigation.

Other Drugs.—No attempt has been made here to distinguish the effect of the mercury pills which were given at the same time as the arsenical preparations, and often between courses of arsenic. During intervals between courses of arsenic, 29 cases were given potassium iodide in 10-grain doses for an average period of six weeks; in 5 cases the number of units had risen at the end of this period, and in 24 cases the unitage remained unchanged.

(ii) *The Effect of Rest.*—In the majority of the tertiary cases observed there was a period of rest during which no treatment was given. In about 90 per cent. of the cases no change in the units was found; in the remainder there was a rise in 5 per cent. and a fall in units in 5 per cent.

(iii) *The Size of the Injection Dose of N.A.B.*—The effect of this can be studied in the following table:

TABLE II.

Dose.	Stationary Cases.			Falling Cases.		
	No. of Cases.	Percentage of Total Cases.	Average Amount of N.A.B.	No. of Cases.	Percentage of Total Cases.	Average Amount of N.A.B.
			Grams.			Grams.
0.3 gram	2	2.2	2.7	—	—	—
0.45 ,,	10	11.4	3.8	10	11.4	9.4
0.6 ,,	9	10.2	6.8	27	30.6	6.3
0.9 ,,	11	12.5	4.0	19	21.6	4.7

It would appear from this table that 0.9 gram is the most effective dose of N.A.B., because of the relatively large proportion receiving this dose who showed a fall in units, despite the fact that they received on the average much less N.A.B.

(iv) *Interval between Doses.*—Fourteen cases received one injection at a time at irregular intervals, varying from three weeks to six months. These injections had no effect on the number of units. Subsequently 8 cases out of the 14 received a course of weekly injections, and 5 out of these 8 cases showed a substantial fall in units. However, in 2 cases where this fall was observed, the condition was not stable, and the units rose to the previous level after a period of rest.

(v) *Previous Treatment.*—Fifty-five out of the 106 cases had received at least one course of injections before coming under observation, and these were for the most part less responsive to treatment than those who had received no previous treatment.

4. The "provocative" effect of an injection of N.A.B. in tertiary syphilis. In a certain number of cases there had been no arsenical injection given within two months of the beginning of the observation, and in these the number of Sigma units was noted before and one week after the first injection of N.A.B. No "provocative" rise in units was observed.

RELATION BETWEEN THE NUMBER OF SIGMA UNITS AND THE ACTIVITY OF THE DISEASE.

This is a very difficult question, because it is impossible to determine clinically the exact extent of the disease—for example, the clinician cannot ascertain during life syphilitic changes going on in the aorta, although extensive disease is frequently seen *post mortem*.

However, in this connexion, certain cases with lesions of the mouth and skin were studied. In these the exact extent of at least one lesion could be determined. It was found that although there was a tendency for cases with more extensive lesions to have a higher number of units in the blood, the number of units increased out of proportion to the visible evidences of the disease. For instance, three cases with ulcers of the mouth averaged 6.6 Sigma units, and three cases, with ulcers of the mouth probably twice as extensive, averaged 300 Sigma units. As the units seemed to increase out of proportion to the visible lesions, one must suppose that either the cases with higher units had undisclosed lesions, or that an additional and unknown factor was operative.

In this study the findings of one case with inflammation of the mouth and fauces is of particular interest. This patient (Chart 8) had three courses of treatment, during which he improved clinically and his Sigma units fell steadily. He did not attend the clinic between the courses of treatment, and when he did return his condition was definitely worse clinically and his units had risen. The third cycle was marked by the formation of a gumma during a six months' absence from the clinic. His units had risen then from 3 to 225. When treatment was recommenced and the gumma broke down into an open ulceration, the units dropped to 71.

THE RELATION OF CLINICAL IMPROVEMENT TO SEROLOGICAL IMPROVEMENT.

Although a detailed study of this kind was beyond the scope of this investigation, certain general observations were made. Table III summarizes 75 cases. It does not include either the latent or the early cases.

TABLE III.—*Relation of Clinical and Serological Improvement.*

Sigma Units.	Definite Improvement.		Doubtful Improvement.		Stationary.		Worse.	
	No. of Cases.	Percentage of Total Cases.	No. of Cases.	Percentage of Total Cases.	No. of Cases.	Percentage of Total Cases.	No. of Cases.	Percentage of Total Cases.
Falling ...	33	43.0	9	11.8	3	4.0	0	0
Stationary	12	15.8	7	9.2	8	10.5	1	1.3
Rising ...	0	0	0	0	0	0	2	2.7

This table shows that clinical improvement was far more frequent in cases which showed a fall in units than in cases which did not. Also, in cases which became worse clinically, the units either rose or remained stationary.

SUMMARY AND CONCLUSIONS.

In summarizing the results of this investigation it may be said that—

1. As regards technique:

By means of the Sigma reaction it was possible to estimate with a high degree of accuracy the amount of reacting substance in the serum of cases of syphilis, the probable error of any single determination being about 6 per cent. The evidence for this is based on the result of many tests on the same specimen of serum on different occasions, and many tests on the serum of certain patients at different times.

Evidence of the same type confirms the claim that properly prepared heart extracts are stable in regard to sensitiveness.

2. As regards the effect of treatment on the number of Sigma units in the blood in the early stages:

In the early cases of syphilis which gave a positive reaction at the beginning of the observation, one-third showed an abortive rise at the commencement of treatment. In these cases after the rise was over, and in the remaining two-thirds of the cases each arsenical injection produced an average fall of 42 per cent. in the number of units present before that injection.

Cases which attended regularly and had a full course of treatment showed in general a steady fall in units to a stable negative reaction, but cases which attended regularly and had an incomplete course of treatment were liable to become resistant to arsenic, the number of units often remaining stationary when treatment was resumed.

3. As regards the effect of treatment in the tertiary stage:

Only 3 out of 106 cases became negative; at the beginning of observation these cases had a low number of units, and had received much previous treatment. Of the remaining cases the units fell in about one-fifth of the cases, fell and then remained unchanged in one-third of the cases, and remained unchanged throughout in one-third.

In 3 cases a rise of units was observed, and in 2 of these cases the rise was associated with a visible increased activity of the disease.

It is probable that in the majority of tertiary cases the Sigma units fall to a certain level as a result of treatment and that it is difficult to cause a further fall in units. This level is usually between 2 and 15 Sigma units.

The most effective dose of N.A.B. was 0.9 gram. No substantial effect was observed in the number of units, if the injections of N.A.B. were given at intervals of three weeks or longer.

Intravenous injections of mercuric perchloride were given to 24 stationary cases, and produced a fall in units in about 50 per cent. of these, but no case became negative.

About 90 per cent. of cases showed no change in their unitage during rest or during oral treatment following courses of N.A.B. The remaining 10 per cent. showed a rise and fall of units in equal proportions.

The number of units in the blood corresponds to a certain degree with the visible extent of the activity of the disease. In 43 per cent. of cases a fall of units was associated with clinical improvement, but in 15.6 per cent. the units remained unchanged although there was improvement clinically.

I desire to express my grateful acknowledgement for the kindly assistance that has made possible this work, and my great appreciation to Professor Georges Dreyer and Dr. H. K. Ward of the Department of Pathology, University of Oxford, for much assistance and advice.

I wish to thank for their great kindness and most substantial help Dr. J. H. Sequeira and Dr. W. J. O'Donovan of the London Hospital, who supplied me with a large amount of material; also Dr. P. Fildes of the London Hospital for the Wassermann results on this material; also Dr. A. G. Gibson, Mr. H. A. B. Whitelocke, and Dr. W. T. Collier, jun., all of the Radcliffe Infirmary, Oxford, for the use of their clinical material and records.

My particular thanks are due to Dr. F. G. Hobson of the Radcliffe Infirmary, Oxford, for the use of his clinical material and great co-operation in prosecuting the research.

My special thanks are due to Miss J. Jorgensen and Dr. A. D. Gardner of the Department of Pathology, University of Oxford, for their generous help in many points of the work.

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CARCINOMA OF THE RECTUM COMPLICATED BY PREGNANCY.

TWO CASES TREATED BY EXCISION.*

BY

R. CHARLES B. MAUNSELL, F.R.C.S.I.,

PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND; SENIOR SURGEON TO MERCER'S HOSPITAL.

DURING the past three years I have had the uncommon experience of operating upon two patients for the removal of carcinoma of the rectum during the period of gestation.

CASE I.

Mrs. B., aged 27, was admitted to Mercer's Hospital on January 4th, 1922. She had one child, aged 12 months, and stated that during the past five months she had had pain when the bowels moved; the pain had been much worse recently and sometimes she lost a quantity of blood; her weight had declined considerably.

A ring-like stricture of the rectum was found about the level of the cervix uteri; it was extremely painful, but with care the index finger could be passed through its lumen. The sensation given to the examining finger was that of a malignant growth. Upon bimanual examination of the pelvis the growth appeared to be freely movable, but the disconcerting fact was discovered that the uterus corresponded, in size and consistency, to a pregnancy of between three and four months' duration. No proctoscopic examination was made, as the parts were extremely tender and the diagnosis was obvious. The facts were fully explained to the patient and to her husband, and radical operation was decided upon.

Owing to the difficulty of clearing the bowels it was decided to perform a preliminary colostomy. On January 10th an incision, about four and a half inches long, was made through the left rectus muscle, at the junction of the middle and outer thirds, the pelvis and abdominal cavity were manually explored to exclude secondary growths, and a permanent colostomy opening was made, taking care to leave plenty of colon below the point of fixation. The protruding knuckle of gut was opened and trimmed before the patient left the operation table. Three weeks later, when she felt and looked much stronger, the coccyx and last segment of the sacrum were removed and the entire rectum and anus, together with the sphincters and the greater part of the levatores ani, were excised in one piece. The cut end of the pelvic colon was then closed by suture, invaginated, and fixed extraperitoneally. The wound was closed in two layers, a drainage tube being inserted rather posterior to the site of the original anal opening. There was very little loss of blood and no shock. The drainage tube was removed on the third day, sutures were removed on the eighth day, and the patient was allowed up on the twentieth day after operation. The pathologist's report was: "Columnar-celled carcinoma of the rectum."

The pregnancy progressed along normal lines, and in the following June the patient entered the Rotunda Hospital. I am much indebted to Dr. J. Quinn, one of the assistants to the Master of the Rotunda, for the following particulars:

"Mrs. B., aged 27, was delivered, on June 28th, 1922, of a healthy male child, 18 in. long and 6½ lb. in weight. Labour lasted sixteen hours, placental stage thirty-five minutes. No instruments were used. There was a very slight laceration of the perineum, which was repaired immediately by one stitch. The chief feature of the case was the absolutely normal manner in which labour progressed and terminated."

Shortly afterwards Mrs. B. and her family went to live in England, and I have lost sight of her.

The second case was diagnosed accurately and sent to me by Dr. B. H. Farrell of Castlecomer on January 14th, 1924.

CASE II.

Mrs. K., aged 38, had had nine living children, and on the date mentioned thought that she was three months pregnant. For the past seven months she had been very constipated, and an increasing amount of mucus and blood had come from the bowel, until the discharge was almost continuous. She had very little pain, and did not think that she had lost much weight, but was very depressed. On examination a friable fungating mass was felt surrounding the lumen of the rectum just above the level of the cervix uteri. Bimanual examination revealed a three months' pregnancy and almost certain involvement of the cervix, as the growth and cervix appeared to move together. At first I refused radical operation, and a colostomy did not appear necessary; but the absolutely miserable and hopeless condition of the patient made me alter my opinion, and I told her that I would, if necessary, remove the rectum and uterus.

I wrote a very full account of the risks and of the almost hopeless prognosis to Dr. Farrell, so that he might explain matters to the patient's husband, who gave me a free hand to do anything which might relieve her wretched condition.

On January 22nd, assisted by the house-surgeon, Dr. Mervyn Abrahamson, I opened the abdomen in the middle line below the umbilicus, examined the liver and iliac glands, etc.; then, having tilted the table into the full Trendelenburg position, I drew the uterus out of the pelvis and found, to my great relief, that it

* Paper read before the Royal Academy of Medicine in Ireland, November 14th, 1924

was not involved in the growth, but was adherent to the rectum and could be separated from it by sponging with a gauze pad. The iliac colon was then divided, the proximal end brought out through an incision in the left rectus, and a Paul's tube tied in. The pelvic colon and rectum were then separated from the pelvis, along with all glands and areolar tissue, packed to the bottom of the pelvis under a covering of peritoneum, and were subsequently removed, along with the anus and muscles, by the perineal route. The only points in which this operation differed from that described by many surgeons is that, owing to the encroachment of the pregnant uterus, I could not divide the middle haemorrhoidal arteries and lateral ligaments of the rectum by the abdominal route, and had to leave them to be dealt with during the perineal portion of the operation. During the perineal dissection I removed a portion of the posterior fornix of the vagina where it lay in close proximity to the tumour. The loss of blood was small and shock so slight that it did not need any special treatment. Convalescence was uneventful, and the patient was allowed up on the sixteenth day after operation, as she was still very depressed, and lying in bed seemed to make her worse. The pathologist's report was: "Columnar-celled carcinoma of the rectum."

On November 8th Dr. Farrell very kindly sent me the following note:

"Mrs. K. returned home about a month after operation. She had gradually got back strength and every day improved in health. On June 30th she slipped and fell in her kitchen. About half an hour after the fall signs of labour set in and lasted for twelve hours without result, when she was given an injection of pituitary extract which, almost immediately, resulted in the birth of a small living male child. There was no trouble with the placenta. This is her tenth baby and he is still alive. Mrs. K. is now doing well, says she never felt better in her life, is increasing in weight, and has a good appetite. The artificial anus is doing splendidly. She thinks that she is pregnant again."

The anaesthetic used in both these cases was ether, administered from a wide-bore Clover's inhaler.

As is well known to most surgeons, there are two "schools" of rectal surgery. One advocates the perineal route for excision, the other despises anything except the combined abdominal and perineal operation.

In the first case I made use of the perineal route, with preliminary exploration and colostomy, because I had no reason to suspect involvement of the uterus, etc., and I considered that the two-stage operation would be less severe on the patient.

In the second case I made use of the combined method, because I meant to remove the uterus and appendages, if necessary, and also because, owing to the depressed state of the patient's mind, I did not think she would consent to a two-stage operation. One cannot expect to operate upon a sufficient number of such cases to enable one to draw up statistics, but the lesson which I have learnt from these two cases is that the two-stage operation is much easier, and I think it should be the method chosen in cases where pregnancy is a complication, unless there is some special reason for the one-stage operation.

Before passing on to more problematical subjects, I would like to state my personal opinion that the incision through the left rectus is the best for colostomy, either with or without a median incision for the exploration. There is no need to defer opening and trimming the knuckle of gut, as there is no fear of infecting the wound or wounds if a covering of bismuth and iodoform paste is applied under a separate dressing. In the one-stage operation it is obvious that a Paul's tube can be tied in.

With regard to the treatment of carcinoma of the rectum in general, I sometimes use the combined method, and more often the perineal, with removal of the coccyx and the last segment of the sacrum, a thorough exploration and a colostomy opening having been made some days previously.

I am convinced that the mortality of the combined method is very much greater than that of the two-stage operation, and I am not convinced that the percentage of "cures" is much more by one method than by the other, provided a preliminary exploration is insisted upon in every case. To put the matter shortly, in order to elicit discussion, I may state the teaching which I give to students. When the growth is in the portion of the bowel which has no mesentery, remove it by the two-stage method, unless there are glands high up which one has to remove. When the growth is situated higher up it is better to remove it by the combined method. I will not describe the steps of the operation performed, but for combined operation will refer to the beautifully illustrated description by the late Edward H. Taylor in his *Operative Surgery* (1914), and for the perineal method I cannot improve upon the technique described by Mr. J. P. Lockhart-Mummery in the *Medical Annual* for 1924. In the latter method I find that working from the anal region upwards is much easier than the older method of freeing the rectum above before excising the anus.

The question—whether it is ever advisable to preserve the anal sphincters—remains. I have been much struck by the following paragraph in E. H. Taylor's book already mentioned, which shows the opinion he held before 1914. "The radical measures which are employed in the treatment of rectal cancer have as their object the complete removal of the disease and the re-establishment of normal sphincteric control." In 1924 the majority of surgeons appear to favour a permanent colostomy and sacrifice the sphincters in every case. Whether this is right or wrong I have not yet had sufficient experience to decide, but I feel that to eradicate the disease is the main thing, and that striving after sphincteric control may lead to inefficient operations.

HAEMOLYTIC STREPTOCOCCAL INFECTION: RECOVERY.

BY

ARTHUR F. COLE, F.R.C.S.EDIN.,

WEST MALLING, KENT.

IN view of the fact that in both medical and lay circles conversation often ranges upon the utter failure or tremendous success of dental extractions in certain systemic infections, this case, carefully followed by a number of observers, should be of interest. As a problem in diagnosis it exercised many, and its happy termination does not prevent one from thinking over the possibility of better methods of treatment, and, above all, earlier diagnosis in similar cases of pyrexia of unknown origin.

On November 6th, 1921, Michael R., aged 19, a student of medicine at Cambridge, complained of malaise and anorexia and fever, followed twelve days later by jaundice and gradual recovery. On November 28th he had a rigor, with violent headache, a temperature of 105°, and profuse sweating simulating malaria. He resumed his studies, and nine days later had his third attack.

On December 19th the patient came under my observation with a further rigor, high temperature, etc., and pains in the hepatic region. Blood examination excluded malaria, and showed a leucocytosis of 15,000 per c.mm.—polymorphs 84 per cent., lymphocytes 12 per cent., hyalines 4 per cent. After two further attacks of a similar type, showing almost identical differential leucocytosis, he was seen by Sir Humphry Rolleston. Cholecystitis was diagnosed, and hexamine and salicylates prescribed, with dieting. A fortnight later the seventh attack showed an increased leucocytosis and the polymorphs rose to 87 per cent. of the total.

Specimens of urine and faeces were examined by Dr. P. J. Cammidge on February 1st, 1922, and found fairly normal, though the latter contained coliforms and streptococci; he diagnosed catarrh of upper intestine, with secondary cholangitis and pancreatitis. The next attack was accompanied by more marked hepatic pain and an easily palpable spleen, and Sir Humphry Rolleston again saw the case; he found a submucosal haematoma, half an inch in diameter, on the pharyngeal wall. During the apyrexial interval following the blood was again examined: Total leucocytes 6,000 per c.mm.—polymorphs 46 per cent., lymphocytes 50 per cent., hyalines 4 per cent. A catheter specimen of urine was sterile.

The patient was seen again on March 5th. He had been looking seedy for some days, and on this day the right side of the face was slightly swollen, but there was not the slightest pain in face or teeth. It was suggested that there might be a septic focus in connexion with the teeth or accessory air sinuses; his mouth appeared to be in perfect repair, and had been recently overhauled by the dentist. Shortly after midday the ninth attack commenced, with hepatic pain, high temperature, and rigor; the spleen was still palpable and tender. A blood film showed nothing abnormal; leucocyte count 11,400; differential not done. Blood cultures were taken during this attack; both plates and broth remained sterile.

On March 16th an *x*-ray examination by Dr. Charles A. Clark showed both antra quite clear, but the second right upper premolar was a dead tooth with much swollen periodontal membrane and bone destruction at apex, indicating a chronic abscess. Twelve days later the tenth rigor occurred with hepatic pain and sweating; there was slight fullness of the right side of the face, but no pain in the teeth. It was decided to remove the suspected upper premolar as a likely focus of sepsis.

On March 30th the tooth was very carefully removed under nitrous oxide and from the injected root cultures were taken on agar and blood serum. The former remained sterile; the latter gave "almost pure culture of haemolytic streptococci." On April 10th and 14th an autogenous vaccine (streptococcal) was given in 2 and

4 minim doses respectively. Thirty-one hours after the second dose, about 4.30 a.m., the patient woke up shivering; temperature 105°, followed by sweating. There was no pain over the liver, but some splenic tenderness. Headache severe; tongue clean; face not swollen. On examination of the blood no parasites were seen. A leucocyte count showed 26,000 per c.mm.—polymorphs 81.5 per cent., lymphocytes 10 per cent., transitionals 8.5 per cent. On the question whether the above attack was similar to previous attacks the patient was emphatic that it was quite different; on the question as to whether the vaccine treatment was the cause, the long delay in onset (thirty-one hours) after the last injection was considered by Sir Almroth Wright to be somewhat against this theory, even if the doses had been too close together. About this time Dr. A. L. Punch of Brompton Hospital tested the blood by the complement fixation method for tuberculosis and found it negative.

On May 22nd he developed measles at Cambridge, twenty-eight days after leaving home. Subsequently he was operated on by Mr. Sidney Scott, F.R.C.S., for acute otitis media, and the lateral sinus had to be explored.

On July 8th diplopia developed. Mr. Holmes Spicer, F.R.C.S., reported homonymous hemianopia and convergent strabismus about 20 degrees, mainly left eye. There was no apparent diminution of movements in either eye. There was severe optic neuritis of the right eye and many retinal haemorrhages; the retinal veins were very full and tortuous. In the left eye the disc was highly coloured, the veins were full, and there was one haemorrhage on the nasal side of the optic disc. The right optic neuritis was still present on July 17th, but subsiding.

On October 2nd the right optic disc was still seen with *plus* four lens; the haemorrhages had all gone—a few dots remained outside the optic disc. Dr. Henry Cotton of University College Hospital made a thorough examination of the heart: he found it was slightly enlarged but within normal limits; there was no evidence of any valvular disease, past or present. He considered the prognosis good. Further radiographic examination was made by Dr. W. C. Long of Tunbridge Wells, with special reference to lungs, liver, and face. Nothing abnormal was discovered.

When seen in March, 1925, the patient seemed in perfect health and was engaged in medical study. He had put on a stone in weight, and was keen on athletic exercise. It is now three and a half years since his severe illness commenced, and during the last two and a half years he has been in normal health.

So far as one can see, the patient has overcome the very severe infection by a haemolytic streptococcus, twice isolated in almost pure culture—first from the dental root abscess, then from the mastoid discharge; the presence of streptococci in faeces may also have been connected with the marked hepatic and other symptoms which led to the opinion that there was an inflammation of the upper intestinal tract. Apparently no permanent organic change has taken place, though there is still a slight enlargement of both heart and spleen. It seems reasonable to consider the turning point to have been the extraction of an infected tooth which had given no trouble, and which the dentist had considered healthy a short time previously. Although blood culture during one of the acute attacks was negative, it is probable that streptococci were in the circulation at some period, and the extension to the meninges evidenced by the optic neuritis and strabismus makes the complete recovery of the patient all the more noteworthy, and should be an encouragement to those treating similar cases.

What, then, was the factor or factors which led to the triumph of the body defences? Most will allow that the removal of a septic focus was necessary; but how difficult to find in some cases, and how easy it is to be wise after the event! Drugs probably had very little influence. Secondly, a factor in recovery was the natural vaccine therapy of the body; this was either continuously in operation, or at those crises when rigors and high temperatures occurred—*ten* during four and a half months. Whether the few injections of autogenous vaccine helped or hindered is a question; in the matter of dosage and intervals between doses upon which Sir Almroth Wright has taught and is teaching, one realizes that Nature may be hindered instead of helped. The method of immunotransfusion, in which the blood of a suitable and healthy individual treated by vaccines is then transferred to the circulation of the patient, would seem to be ideal for such acute and anxious cases as this.

Finally, it is possible that clinical observations are correct in suggesting that one disease may oust another. Incompatibilities may exist between diseases; the onset of measles in this case may have been the decisive factor in determining recovery from a streptococcal infection so often fatal. Compare the effect of artificially produced tertian malaria upon the progress of general paralysis of the insane, and the effect of induced abscess formation upon kala-azar in the pre-antimony tartrate injection period.

Note by SIR W. H. WILLCOX, K.C.I.E., M.D.

The case described is of very great interest. The symptoms pointed clearly to a septicaemic infection of focal origin. The recurring attacks of rigors and high temperatures were undoubtedly due to recurring invasions of the blood stream with pathogenic organisms. The jaundice occurring early in the attack was no doubt due to a hepatitis resulting from the septic invasion. It seems clear that in this case the primary focus was an apical dental infection of the second right upper premolar, which was disclosed by *x*-ray examination of the teeth. A point of great interest is the relative increase in the lymphocyte count (50 per cent.) on February 19th, 1922, associated with a total leucocyte count of 6,000 per c.mm. (a slight leucopenia). I have often observed this phenomenon in cases of chronic septicaemia of dental origin. The organism seems to have been a haemolytic streptococcus associated with the apical dental infection, and the severe reaction after the autogenous vaccine confirms this view. The eradication of the primary focus of sepsis marked an important improvement in the patient's condition and the recurring rigors ceased—in other words, the big septicaemic invasions were stopped.

In cases of this type the removal of the primary focus of infection, if it is of long standing as in this case, is not necessarily followed by complete cure, because secondary smaller foci have probably become established in the bowel or elsewhere. In this case it is probable that this secondary infection was the result of the otitis media following the attack of measles. The inoculations probably played only a small part in the recovery of the patient, his immunity being no doubt mainly the result of the streptococcal invasions after the primary focus of sepsis had been removed. Had the primary focus remained it is very unlikely that immunity would have been established.

The case is similar to other acute cases which have been under my observation, and illustrates the supreme importance of the most careful search for foci of sepsis—in the teeth, tonsils, antra, bowel, kidney, bladder, etc.—in cases of obscure septicaemia. It also illustrates the great importance of the removal, if possible, of the primary focus of sepsis, without which continued improvement is impossible.

A FATAL INJURY OF THE VAGINA.

BY

R. BLAIR, M.B., CH.B.,

RECENTLY R.M.O. IN DUNDEE ROYAL INFIRMARY.

IN 1899 F. Neugebauer, under the title "Venus cruenta violans interdum occidens,"[1] reported on over 150 cases of coital injury gathered from publications; but individual cases still have interest, which, in the case here reported, is heightened by the unusual sequel. Of Neugebauer's list twelve cases were younger than 16 years and six older than 40—namely, 45, 47, 48, 50, 58, 59. (R. C. B.)

A woman, aged 55, was admitted under Dr. R. C. Buist's care on January 1st. She had had three pregnancies—twice twins. The menopause occurred at 40. She had become a widow, but remarried four months previously, and a week before admission felt pain during coitus. Bleeding followed, and continued a few days, being aggravated by vaginal examination or by douching. Three days before admission shivering attacks began and had continued; she became very ill, and was admitted to hospital. She was thin, ill, and deeply jaundiced, and complained of headache. The temperature was 99°, the pulse 98, and the respiration 24; the skin was dry, the tongue dry and furred. No abnormal signs were found in the chest or abdomen. Pelvic examination showed: senile vagina, uterus small and anterior, os closed; appendages normal. Inspection with speculum showed a tear 3 in. long running down the right side from the fornix, tapering off toward the vaginal entrance and sealed with clot. The leucocyte count gave 10,000, with 77 per cent. polymorphs. The very dark urine contained bile pigment; Fouchet's test was definitely positive. Glucose-saline solution was given by rectum, at first continuously and then every four hours, and submammary saline injections were given also. Fixation abscess was sought to be obtained on two occasions, but only induration resulted. Nuclein was given hypodermically and then by mouth. Blood culture was negative on two occasions.

On January 4th jaundice had deepened; the left parotid was swollen, but it subsided without suppuration. On January 5th the

[1] *Monats. f. Geburtsh. u. Gynaek.*, 1899, ix, 221, 389.

leucocyte count was 13,000; blood urea-nitrogen 43 mg. in 100 c.cm. Each day one or more rigors occurred and mental confusion developed. The temperature ranged from 97° to 103°, and apart from a short rally on January 8th exhaustion increased till death on January 12th, nineteen days after the injury.

Necropsy.

A necropsy, conducted by Dr. F. M. Milne, showed a closed tear along the right wall of the vagina, with softening, but no pus in the paravaginal tissue; a dark thrombosed vein crossed the back of the uterus to the left side, where it passed upwards to the brim of the pelvis; the left ilio-psoas muscle was purple-red in colour, in marked contrast to that on the right, and on section showed an appearance suggestive of gas formation to a slight degree. The liver was congested, but there was no abscess, no obstruction to flow of bile, and no gall stones; the spleen was enlarged; the lungs showed hypostatic congestion; kidneys were congested. The organs were otherwise normal.

Professor W. J. Tulloch examined the spleen and left psoas muscle bacteriologically, and reported in the muscle *B. welchii* and streptococci, both of which developed well in anaerobic culture; in the spleen were streptococci and Gram-negative bacilli; the latter were believed to be contaminators, but the former were "undoubtedly evidence of *ante-mortem* infection." With regard to the finding of *B. welchii* in the psoas muscle, it was thought that this might have been merely a *post-mortem* contamination, but "having regard to the condition of that area of muscle, it is quite possible that infection with that organism played a part in the pathology of the case."

My thanks are due to Dr. R. C. Buist for advice and for permission to publish the case, and to Dr. F. M. Milne and Professor W. J. Tulloch for their assistance.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

BULLET EMBEDDED IN TONGUE.

THE following case, which we believe to be unique, seems worthy of record. We shall be glad to learn from readers whether similar cases have been recorded before.

A soldier came into the hospital one day complaining of a lump in his tongue, which on examination proved to be firm and hard. The tumour was oblong in shape, with its longitudinal diameter in line with the right lingual artery. A little nearer the tip of the dorsum there was a small fistula from which pus oozed when the tumour was palpated. He gave a history of having been wounded in the recent fighting between the Chili and Fengtien forces, and a scar mark on his right upper lip bore testimony to our suspicion that the tumour may have been caused by a foreign body, which had become embedded and caused the sinus formation. He was operated upon, when a bullet was extracted. Had the latter penetrated a little further the lingual artery would have been injured.

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C. H. LEI,
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CYSTIC HYGROMA OF CHEST.

THE following case of cystic hygroma is reported on account of the unusual situation of the tumour and of its general interest.

A female baby, aged 6 weeks, was brought to the out-patient department of the Ingham Infirmary, South Shields, on March 23rd, with a large lump on the right side of the chest. The mother stated that it was present at birth, being then about as large as a hen's egg, and that it had got gradually bigger up to 5 weeks, and then commenced to increase rapidly in size. The tumour, the size of a Tangerine orange, was situated above and to the right of the right nipple. It was rounded, and not lobulated, and felt like a large cyst. There was no fluid thrill. It could be freely moved in the direction of the muscle fibres, but only slightly across them; it appeared, however, to be quite free in the subcutaneous tissue. The overlying skin was not adherent and was almost normal; there was no dimpling and only a suggestion of glazing. On the postero-lateral aspect of the right arm just above the elbow was a diffuse lobulated lipoma-like swelling, which the mother stated was also present at birth, but had not increased in size.

When I saw the child again, a few days later, the tumour had increased to the size of an ordinary orange. The overlying skin was now definitely glazed, and bluish in colour, but the tumour retained its former characteristics. It was thought to be some type of degeneration cyst into which there had been haemorrhage, and removal was advised.

The child was admitted to the infirmary, and on March 27th Dr. Hamilton operated. The overlying skin was removed with the tumour, which was dissected out entire with some difficulty, as it was adherent to both the fascia and to the pectoralis major muscle, a small portion of which had to be removed. A small drain was introduced and the wound closed. Serum continued to escape for a day or two. The mass on the arm was not removed. The tumour consisted of a large central cyst with thick walls, and several small surrounding cysts. It was sent complete to the Clinical Research Association for examination. The following is the report:

"The section shows an extensive cystic hygroma, with evidence of continuous addition and haemorrhage. The walls are of granulation tissue, and the small cysts contain serum and lymph. Probably there was some abnormality of the blood vessels as well as of the lymphatic channels. There is no evidence of new growth."

The child was discharged on April 8th quite healed and in good condition.

I am indebted to Dr. Hamilton for permission to publish this case.

H. VERNON INGRAM, M.B., B.S.Durh.,
M.R.C.S., L.R.C.P.,
House-Surgeon, Ingham Infirmary,
South Shields.

POST-MORTEM CAESAREAN SECTION: A LIVING CHILD.

ON February 21st Mrs. S., a Khasi patient, was admitted at about 11 a.m. in an unconscious state. She was immediately placed upon an out-patient examining couch and I was summoned without delay. I found her in her first and final eclamptic fit. There was marked oedema of the legs, for which she had not sought any treatment as, according to her husband, a similar swelling had not caused her any trouble either prior to, or at the time of, her three previous confinements. Before any treatment could be undertaken she collapsed quite suddenly and died about three minutes after admission. Examination showed that she was at about term, and that the child was still alive. Death was so rapid and unexpected that two minutes or more were spent in making quite certain that it was actual and not apparent. It must have been about seven minutes after death before a very hasty Caesarean section was performed. An apparently lifeless full-time male child was delivered. Artificial respiration was undertaken with great energy and efficiency by the two European sisters attached to the hospital, and they were well assisted by the Indian nurses under training. Before the operation wound had been hastily approximated the child was crying. He had a number of slight fits during the first twenty-four hours, but has since done very well, and as I write—sixteen days later—is making excellent progress.

H. GORDON ROBERTS, M.D.,
Ch.B.Liverp.

Khasi Hills Welsh Mission Hospital,
Shillong, Assam.

TREATMENT OF SYPHILIS THROUGHOUT PREGNANCY.

MANY syphilologists believe that once a woman has been infected with syphilis she should be treated throughout every subsequent pregnancy; but contrary views are held by some medical practitioners, who are supported in their opinion by the publication of cases in which one course of antisyphilitic treatment of an infected mother has been followed by a series of healthy children. The following case seems worth recording as it demonstrates the fact that even extensive past treatment will not necessarily prevent congenital infection.

A woman, aged 18, reported at a clinic in May, 1922, with lip chancre and papular syphilide; the Wassermann test of the blood was positive. She received, in addition to heavy dosage of mercury and iodides by the mouth, thirty-three intravenous injections of "914," totalling 17.5 grams, between May, 1922, and March, 1924. During that period the blood had been alternately negative and positive. It was considered to be a case of arsenic-fast spirochaetosis, likely to have benefited by the administration of bismuth. Menstruation ceased in February, 1924, and she consulted her medical attendant, who advised her to cease treatment during pregnancy. An apparently healthy child was born at term, but a month later snuffles and then anal condylomata appeared. The mother, on examination two months after confinement, was found to have large papular lesions on one labium majus from which *Spironema pallidum* was obtained.

ROBERT FORGAN.

Glasgow.

Congress of Obstetrics and Gynaecology.

DISCUSSION ON PUERPERAL SEPSIS.

As reported in the last issue, the fifth British Congress of Obstetrics and Gynaecology was held at the house of the Royal Society of Medicine from April 22nd to 24th, under the presidency of Dr. H. RUSSELL ANDREWS.

The first two sessions of the Congress were devoted to the subject of puerperal sepsis, and the three later sessions to miscellaneous papers. We published in the last issue (pp. 779, 783) the reports of the two committees—that of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, and that of the North of England Obstetrical and Gynaecological Society—on the prognosis and treatment of puerperal sepsis, also the communications by Sir Ewen J. Maclean on puerperal sepsis in Wales (p. 770), and by Dr. Gibbon FitzGibbon and Dr. J. W. Bigger on a clinical and pathological investigation of puerperal fever (p. 773). Other papers read at the same session were by Dr. L. P. Lockhart, on bacteriological examinations during pregnancy, and a statistical paper by Dr. T. H. C. Stevenson, of the General Register Office.

Dr. STEVENSON emphasized the distinctly seasonal character of the mortality from puerperal sepsis, and showed a series of illustrative graphs. He said that this mortality had a winter maximum in the fourth and first quarters of the year and a very definite and regular summer minimum in the third quarter. That rule applied almost without exception over the years 1911 to 1922. Not only was there a seasonal variation in the maternal mortality from cases returned as septic, but also a similar variation, rather less marked at both extremes, but still quite distinct, in cases of maternal mortality from other than septic causes—namely, phlegmasia alba dolens, and the miscellaneous complications of difficult labours. No doubt septic causes entered into these cases also, but he could only speak on the basis of the returns. Dr. Stevenson also dealt with maternal mortality in the period following demobilization (1919-20), and showed that the peak of the curve representing demobilization was repeated with remarkably complete coincidence, after an approximate interval of nine months, in the peak of the curve representing puerperal mortality. This particular excess related to a period of about five months' duration, and formed the only exception to the regular rhythm of seasonal change over the period of eleven years.

GENERAL DISCUSSION.

In the afternoon a discussion took place on the more general aspects of the same subject. Dr. J. E. GEMMELL (Liverpool) was in the chair, and so much interest was taken in the debate that only by limiting speakers severely as to time was it possible to include within the scheduled two and a half hours all who desired to participate.

Dr. J. WHITRIDGE WILLIAMS (professor at Johns Hopkins University and obstetrician-in-chief at Johns Hopkins Hospital, Baltimore) opened the discussion. Referring to the reports of the two committees submitted to the Congress, he noted that the one included 247 cases with a mortality of 35.8 per cent., and the other 154 cases with a mortality of 76 per cent. This meant merely that more serious cases were included in the one than in the other, for it was inconceivable that results of treatment should differ so widely. Altogether there were 401 cases with a mortality of 48 per cent., which was good or bad according to circumstances—that is, the seriousness or otherwise of the cases. The reports showed that women who had been subjected to much manipulation were more likely to develop infection than those who had been left alone. It would be a misfortune if the point of view which regarded puerperal infection as in great part contact infection were abandoned. It appeared that there was one type of case which would get well if left alone, and another type which would die no matter what one did. The reports agreed as to the heavy mortality—some 80 per cent.—among women who were subjected to intrauterine manipulation. For years in America he had been teaching that the worst thing that could be done was to interfere with the interior of the infected uterus. The reports differed markedly in the results following the use of antistreptococcic serum—the London committee brought forward 33 cases so treated, with a mortality of 18 per cent., the North of England committee 104 cases, and 72 per cent. mortality. This simply meant that a milder type of case was treated in London. All the information went to show that they were practically helpless in the treatment of severe cases of infection. When women had general streptococcic peritonitis they were likely to die whatever one did; with pyaemia, if left alone, two-thirds of them died, and if operated on probably half. On the other hand, cases which did not show these acute general conditions might recover if left alone, prognosis depending on the resistance of the patient and the virulence of the organisms. What was wanted was research, not purely obstetrical, but proceeding on general lines of bacterial investigation. The average case of infection, if left alone, took care of itself, but if the organism was virulent and the woman's resistance low death was the almost universal outcome no matter what one did. Drs. FitzGibbon and Bigger had reported that, roughly, streptococci were found in the vagina of the pregnant woman in two cases out of three—fortunately, they said, not of the haemolytic type. He believed, however, that any technique which employed the speculum for obtaining the vaginal secretion was not above suspicion. He had found that with the speculum contamination was carried up from the vagina. He thought it a misfortune to talk about endogenous infection as these authors did, except with the gonococcus and possibly certain saprophytic organisms. In 3,000 consecutive admissions to his clinic up to the end of 1924 there were 436 cases of raised temperature in which the possibility of intrauterine infection had to be considered—that is, a temperature of 100.4° or over on more than one occasion, the temperature being taken every four hours. In 226 of these cases cultures were taken, and *Streptococcus haemolyticus* was found in 32, the non-haemolytic variety in 34. In the whole series of cases there were three deaths. Two of the women who died had been brought in infected during or after labour; the other woman who died developed the infection in the clinic; she had the haemolytic streptococcus, and had not been examined vaginally. Therefore, out of nearly seventy women in whom the streptococcus was found the only woman for whose death the service could be said to be in any way responsible had not been subjected to any of the manipulations which ordinarily antedated puerperal infection. It was found that, of the entire number of women with bacteria in the uterus and presenting a febrile puerperium, 24 per cent. had had a spontaneous labour, had not had a torn perineum or any such catastrophe, and had not been examined vaginally or subjected to any manipulation. Of the group showing *S. haemolyticus* 31 per cent. offered no ordinary possibility of external infection. In some of these cases the woman had evidently conveyed infection to herself with her own hands, and in the majority of apparently causeless cases he thought there was, not an autogenous infection, but some form of external infection escaping recognition. The fact remained that out of 3,000 admissions there was only one death for which the hospital service could be said to be responsible, and even in that case the woman was infected, not by anything done in the service, but in some other way.

Professor W. BLAIR BELL (Liverpool) said that cases in which there was a sudden onset of septicaemia and no local resistance whatever would practically all die. In cases in which there was local resistance there was a chance, chiefly by surgery, of saving the patient's life. It must not be thought that a case with streptococcic peritonitis was inevitably fatal. He had had one case, with no fixed lesion in the pelvis, but with general streptococcic peritonitis, the streptococci being of the haemolytic variety; this case also had bronchopneumonia, and the haemolytic streptococcus was isolated from the sputum. By draining the fluid from the abdominal cavity and treating the patient in the open air she recovered. If, therefore, one did get an apparently hopeless case it was always worth while doing one's best in the attempt to save it. He proceeded to give some figures relating to cases in which the flora of the vagina had been examined. One point brought out was that coitus shortly before labour was a very likely means of conveying the streptococcic infection. In 20 cases there had been a history of coitus within seven days of labour, and 4 of these were infected with the haemolytic streptococcus. A classification was also made of the cases according to clinical interference. It appeared that in 23 cases there was no interference (on the part of midwife or doctor) before admission, and among these the number of cases showing the haemolytic streptococcus was 1 and the non-haemolytic 4. In 24 cases in which there had been interference including digital examination before admission the number showing the haemolytic streptococcus was 3 and the non-haemolytic 6. In 13 cases there was interference before and after admission to hospital, and of these 3 had the haemolytic streptococcus and 3 the non-haemolytic. In 14 interference was only after admission and 2 cases showed the haemolytic and 2 the non-haemolytic streptococcus. The speaker also pointed out that puerperal sepsis was always worse during the first three months of the year.

Mr. VICTOR BONNEY (Middlesex Hospital) recalled a paper which he had read before a similar gathering some years ago in which he had advanced the conclusion that puerperal sepsis was principally autogenetic. He had pointed to the precautions which had been taken for many years against what might be called extrinsic sepsis, and to the fact that in spite of all such precautions the morbidity was very little altered. No one would deny the possibility of conveying germs from without into the uterus, but his contention had been, and still remained, that that only occurred in a small proportion of the cases. All the measures inculcated by the teachers had for their object the prevention of extrinsic sepsis, and yet the figures advanced that day seemed to him to prove very conclusively that sepsis was increasing. He noticed that in one of the reports the origin of the sepsis in very many of the cases was not stated. He wished the compilers of those statistics had been a little bolder, and had described these as cases of intrinsic sepsis. If the bulk of puerperal sepsis had been extrinsic then the measures which had been taken for many years, and recently with increasing rigour, would have occasioned a marked fall in the incidence, whereas any decline had been no greater than one might have expected if only a small proportion of the cases were of extrinsic origin. As a parallel instance, he mentioned that at the Chelsea Hospital for Women in 1900 the mortality rate for major abdominal operations was 5 to 6 per cent., and by 1906 it had fallen to 1.6 per cent., at about which figure it had remained. During the period 1900-06 gloves had been introduced, and had protected the patient against extrinsic sepsis, but were of no value against intrinsic sepsis, which continued in spite of these measures. It was making too much of the bacteriological evidence to believe that only haemolytic streptococci could give rise to sepsis. It had been argued that bowel organisms were innocent, but in fact they could be very harmful, and they were only kept in check on a very narrow line.

Professor HENRY BRIGGS (Liverpool) hoped that the committees which were reporting on the subject would allow the term "puerperal fever" to remain, because there was a great deal to be said for it. The reports spoke of a pyrexial period without stating exactly what was meant by that term, and what temperature constituted its onset.

Professor BECKWITH WHITEHOUSE (Birmingham) said that puerperal sepsis depended largely on two factors: the amount of damage done to the tissues, and the amount of haemorrhage which had occurred beforehand. He had taken 500 consecutive cases and had caused his students to follow them out. Out of 50 of these cases examined bacteriologically, 5 showed haemolytic streptococci; these 5 went through a perfectly normal labour and puerperium. This group of cases included a certain number of forceps deliveries. Low forceps was employed 17 times and high forceps 5 times, and among these last 5 cases were 3 cases of morbidity. He thought that in the interest of the nation every woman, at least during the eighth month of pregnancy, should have the advantage, not only of the attention of a midwife, but of a doctor. A midwife could not be expected always to recognize a minor case of contracted pelvis. If all cases were seen by the medical profession it would be possible to group them according to expectation, as to whether they could be left with the midwife or whether minor or major difficulties were likely to be encountered. He agreed with Professor Blair Bell as to the likelihood of infection being conveyed by recent coitus.

Dr. F. J. MCCANN thought that "puerperal general infection" would be a better term than "puerperal sepsis." It was well to retain the word "infection" because it brought home to all concerned the fact that puerperal infection was comparable with wound infection in general surgery. The hope in treatment was ante-natal care, and the question was closely associated with housing. Much could be done by instruction in cleanliness, and also by the provision of cheap obstetric outfits for the poor. If the mortality only were considered a wrong conception of the extent of this disease would be obtained. One had to consider the countless number of women who suffered from the effects of puerperal sepsis—chronic metritis, cervical catarrh, cicatricial scars, badly healed perineal tears, and so on. These women were to be numbered by the thousand. Provision ought to be made for the admission of sufferers to general hospitals. It was a blot on the scientific intelligence of the profession that to-day these women should be admitted to fever hospitals; they should go into ordinary hospitals, where their condition could be studied, and where they could have the advantage of all the equipment commanded by the modern hospital. He believed that a bad infective case should never be given up. One very successful method of treatment was starvation. In a case of peritonitis if one went on feeding the patient intense toxaemia was likely to develop from which the patient would ultimately die. But he could recall at least one case in which, after starvation, the pus became localized and he was able to drain. Another line of treatment was the old-fashioned "cold pack." He wondered how many members of the Congress were accustomed to employ it; it was one of the best things in what was known as the "typhoid state," and he had seen patients rescued from the grave by the "cold pack."

Dr. B. DAWSON, who represented the Australian Government at the Congress, said that Australia at present had a higher mortality than Great Britain in cases arising from parturition. The figures for Australia in 1922 were 4.7 per 1,000, for England 3.81. The death rate from septic conditions alone was practically the same in both countries, and there was the same curious difference between rural and urban areas. In urban areas, whilst the death rate from septic causes was high, the death rate from other causes was low, and the reverse was true of the rural districts. Although women in the urban districts had the benefit of greater skill and attention, and thereby some catastrophes of labour were avoided, the increased amount of interference which they received might perhaps account for the higher septic rate. There was nothing in Australia corresponding to the Central Midwives Board, and

the country was in a similar condition to that obtaining in England twenty years ago, when a large number of entirely unsuitable and dangerous women were practising as monthly nurses. Women in the rural districts of Australia lived frequently under very bad housing conditions and had to do exhausting work; on the other hand, they had abundant sunshine, fresh air, and good food. He pleaded for an imperial, possibly an international, system of recording cases, so that the amount of dependable statistical material would be increased; also that bacterial technique should be standardized as far as possible, and that in certain well defined clinical conditions treatment also might be more or less uniform.

Dr. REMINGTON HOBBS (medical superintendent, Kensington Infirmary) said that exploration of the cavity was certainly contraindicated in a uterus in a state of sepsis. The only cases in which such exploration should be done were those of severe haemorrhage. If success in treatment was to be attained the uterine tissues must drain efficiently. There was often a mechanical block in the cervical canal. With regard to treatment, he thought that more reliance might be placed on glycerin, which produced an osmosis of the tissues and drained the cavity as well as the cervical canal. The reason for some failures was that doctors did not realize that the uterus required many treatments—many glycerin treatments, for example. When inflammation had spread to the Fallopian tubes attention should be directed first to the uterus, which was painful and tender, and if the uterus were drained there would not be a necessity for removing so many of the Fallopian tubes. He felt that but for some failure in the technique of treatment there would be a larger number of permanent cures.

Colonel L. W. HARRISON (Special Medical Officer for Venereal Diseases, Ministry of Health) referred to the statistics on puerperal mortality and demobilization which Dr. Stevenson had brought before the Congress. He thought that they might be explained by a considerable increase in the rate of gonococcal infection of wives by men on demobilization. On this hypothesis the gonococcal infections which took place at the time of conception were succeeded by infections with mixtures of organisms, including that, or those, responsible for puerperal fever. Mixed infections were, of course, a very common sequel of gonorrhoea in women as in men, and he was sure that in many cases of so-called chronic gonorrhoea in women the endocervicitis was due, not to the gonococcus, which had long since been thrown out, but to streptococci, staphylococci, diphtheroids, and other organisms, which would not have gained a footing in the mucosa if the ground had not been prepared for them by the gonococcus. Very large numbers of men must have left the army on demobilization suffering from gonorrhoea. The incidence of venereal diseases among the troops immediately after the armistice was, he believed, four or five times what it had been during the war. He thought it would be interesting to see if the period of most active demobilization was followed by a marked rise in the incidence of ophthalmia neonatorum, and this had proved to be the case. The notified cases of ophthalmia neonatorum per 100,000 births since 1915 had been as follows:

1915 835	1918 986	1921 979
1916 969	1919 1,249	1922 911
1917 1,004	1920 1,076	1923 870

The peak of notified ophthalmia preceded that of puerperal mortality by about three months, and it might be, as Dr. Stevenson had suggested to him, that gonococcal infection contracted some months after conception was more likely to be followed by ophthalmia neonatorum than was gonococcal infection at the time of conception. The rates of notified puerperal fever and ophthalmia neonatorum for the county of London from 1915 to 1923 showed a steady decline in ophthalmia since the first quarter of 1921, but the rate of notified puerperal fever was as high at the end of 1923 as at the end of 1919. If there was a connexion between gonococcal infection and puerperal fever he would suggest that when a woman was infected with gonorrhoea the risk of ophthalmia neonatorum might be chiefly at the next birth, but the risk of puerperal fever persisted, since the mixed infection was not so quickly thrown off as the gonococcal. All this did not prove that gonococcal infection prepared the ground for the germs of puerperal fever, but he thought that the figures were suggestive, and that more ante-partum attention to infections of the vagina and cervix would considerably reduce the incidence of puerperal fever.

Dr. F. W. GORDON (New Zealand) said that his country had the lowest infantile mortality in the world, but one of the highest maternal mortalities. He wondered, however, whether the statistics of maternal mortality published in the British and Continental journals were a reliable guide to the incidence of puerperal sepsis. In New Zealand it was now necessary to notify the puerperal morbidity. In every public and private hospital, if a patient had a temperature of over 100° F. for more than two days the case had to be notified to a Government inspector.

Dr. H. J. PHILLIPS brought forward some figures from the Monsall Fever Hospital, Manchester, where a block was set aside for puerperal sepsis cases. The figures related to the whole of the cases treated in that block from January, 1924, to March, 1925. During the first eight months of that period he continued treatment on ordinary lines, from non-interference up to curetting, and of the 55 cases so treated 13 died, and the average stay in hospital of the recovered cases was thirty-nine days. Afterwards he treated the cases by lymph drainage (glycerin in the uterus) combined with immunotransfusion in a few septicaemic cases, and the results had exceeded his expectations. Of the 45 cases so treated only 6 had died, and the average stay in hospital of the recovered cases was 25.9 days. Of the 42 recovered cases which were treated on ordinary lines complications occurred in 23: general peritonitis 1, pelvic peritonitis 2, lobar pneumonia 2, salpingitis 3, pelvic cellulitis 1, pelvic abscess 2, parametritis 3, phlegmasia dolens 2, single abscess 5, multiple abscesses 2. Of the 39 cases treated by lymph drainage complications occurred in 3: pelvic abscess 1, parametritis 1, single abscess 1. The number of major operations performed in the first set of cases was 5, and in the second set 1.

Dr. JAMES HENDRY (Glasgow) gave an account of certain groups of cases—a rough total of 63 out of 745 confinements in the institution with which he was connected—which showed a rise of temperature, and analysed the causes so far as these were ascertainable. A certain number were due to general diseases or ante-natal infective conditions—such as tonsillitis, for instance. On 14 cases, dealt with domestically outside, the forceps had been used, and the patients afterwards admitted to the institution; of this number 5 cases showed pyrexia, four of them of the most severe type. Of the severe cases clinically there were only 6 in the whole series; of these, 4 were fatal, 3 of the 4 being cases of "failed forceps" in which there had been extensive bruising and laceration of the tissues.

Dr. C. E. DOUGLAS (Cupar, Fife) stated the case from the general practitioner's point of view with regard to the etiology. He based his remarks on the statement often made at consultations that easy cases often developed sepsis, and that difficult labours seldom went wrong. One of the reports stated, "Our figures do not at all bear out the latter part of this view, but show that in 25 per cent. of cases there is no obvious etiological factor present." He welcomed the latter statement, and thought that much would be made of it; the former statement was also true in a sense, but the figures were not available—that is to say, it was not known from what number of normal labours these others were extracted. Dr. Douglas proceeded to give the figures for his own practice, dating back to 1880. During that period he had had 2,200 maternity cases. He had done 393 forceps operations, and had had only one septic death, some thirty years ago. He had also done 164 other operations—versions, removal of placenta, etc.—without a death, making in all 557 operations with one death. On the other hand, in the remaining 1,663 cases he had had 5 septic

deaths, or 1 in 333, showing that the risk in normal cases was at least as great as in operations carefully conducted. In his last 1,670 cases taken consecutively he had had 2 septic deaths (1.7 per 1,000), and in both cases there had been the minimum of manipulation. Taking the statistics presented to the Congress, did not even the best of them point to an irreducible minimum of something under 2 per 1,000? Why was this? Why was such extreme care necessary? Was it not that some factor was present which had not received sufficient attention? He thought the forgotten factor was the woman herself. Might it not be that the parous woman, *ipso facto*, was apt to die? With heart disease, tuberculosis, and other conditions, a woman might go on for years, but if she became pregnant, while Nature sustained her to fulfil her duty to the race, she died after labour. There seemed therefore, *a priori*, some reason to suspect that the parous woman differed from her nonparous sister. The clinicians apparently had no more to say, but the physiologists and the biochemists had thrown some light on the subject. Percy Herring had recently shown that in albino rats there were very definite changes in pregnancy. The liver was increased 27.5 per cent. in size, the adrenals 10 per cent., while the thyroid was decreased 10 per cent. and the pituitary 24 per cent. The biochemist showed that the nitrogen exchange was affected to an important extent, much nitrogen being stored up in the later months, far more than could be needed for foetal and placental tissues, while the renal threshold for sugar was lowered, and a condition of hydraemia existed, a minor degree of the dropsy which was sometimes met with. How, in the face of these facts, could the view be maintained that a pregnant woman was just a healthy person who was going to have a baby? The inference was obvious. She must be studied from quite a different standpoint. More must be learnt about the woman herself, not what micro-organisms were infecting her. Her opsonic index, her power of active immunity against sepsis, and so forth, should be studied. From the clinical point of view the extremists on both sides should be brought to task, both those who roughly handled her and those who, fearful of doing harm, would leave her till she was exhausted before giving her help. The parous woman was a delicate creature, defenceless against infection, and should be dealt with—always, however, with the utmost gentleness.

Lady BARRETT (Royal Free Hospital) described the results of a series of investigations of cases of morbidity. These investigations, she said, had been undertaken from the point of view of discovering the best way to end the sepsis in each case. It was found that old gonorrhoeal cases might be followed by streptococcal infections in the vagina. There were two separate outbreaks of infection occurring in this series which had, apparently, quite different causes. In one of these the infection appeared to be due to the accoucheur, who was suffering from oral sepsis, and who was responsible for four cases of severe streptococcal infection. In another outbreak of infection it was difficult to find anything in common so far as the handling of the cases was concerned, because they had been delivered and nursed by different people, but on going into the history it was found that every one of them had been placed at one time in a particular ward. No further admissions to that ward were allowed until it had been fumigated and disinfected, and no other case of infection arose. It was also evident that in certain cases a sloughing vagina might be the starting-point of sepsis which appeared to ascend into the uterus at a somewhat late date. One was more impressed, said Lady Barrett, by the women who were not infected than by the women who were. The women not infected greatly outnumbered those who had any sign of morbidity whatever, and one was driven to feel that, however useful the investigation of sepsis itself might be, the kind of research which was urgently needed was a research into the causes of resistance of women during pregnancy and the puerperium. Possibly research into the bactericidal powers of the blood in women during pregnancy and again in the early days after delivery might lead to some method of reinforcing the resistance, and hence perhaps offer a means of diminishing the incidence of puerperal infection.

Mr. ALECK W. BOURNE (St. Mary's Hospital) said that in the London report presented to the Congress the cases might be divided, from the point of view of treatment and prevention, into two groups: one group, consisting of 25 per cent. of the cases, had no apparent etiological factor, and here the problem of prevention required more extended bacteriological and serological work; the other 75 per cent. of cases directly concerned obstetricians from the point of view of prevention, and what they had to do did not differ at all from what the general practitioner was called upon to do. He emphasized the enormous importance of ante-natal examination and treatment and the minimum of ante-natal interference. Much of the teaching of students of the present day was devoted to points which were abstruse and of small practical value. When students were sent out more thoroughly equipped for the exercise of ante-natal care a great step would have been taken towards the stamping out of puerperal fever. A large number of women, especially in the rural districts, had no ante-natal care. He was convinced that in course of years, by attention to this and other points, puerperal sepsis would be brought down to an irreducible minimum. One speaker (Dr. McCann) had mentioned the housing factor, but, according to the Registrar-General's report, Shoreditch, where the housing conditions were in many cases squalid, had the lowest maternal mortality of any metropolitan borough, while in Hampstead, where the housing was good, the maternal mortality was relatively high.

Dr. T. WATTS EDEN (Consulting Obstetric Physician, Charing Cross Hospital) said that the systematic study of puerperal cases had hardly begun. The question of whether the bulk of sepsis was extrinsic or intrinsic had not even been settled. It was not known what was the real significance of streptococci in the vagina. Not as much was known about the pathological anatomy of puerperal sepsis as was desired. Many gynaecologists learnt what little they knew about puerperal sepsis from cases seen in consultation, and they did not see these cases as a rule until they were in their last stages. It seemed to him impossible to undertake anything approaching a systematic study of puerperal sepsis unless hospital facilities were available for studying the condition from beginning to end. The cases must be studied in an institution where it was possible for bacteriological work and modern methods of investigation to be carried out. Government assistance was necessary to this end; hospitals could do little or nothing unaided. He suggested that the Congress should send to the Ministry of Health an expression of its opinion on the necessity of such provision of hospital accommodation.

It was agreed that such a resolution should be drafted, and at a later stage of the Congress the following resolution was submitted from the chair and carried unanimously:

> In the opinion of the British Congress of Obstetrics and Gynaecology the most urgent requirement in connexion with the problem of puerperal sepsis is the provision of adequate accommodation for the reception and treatment of these cases in hospitals, supervised wherever possible by obstetric surgeons.

Dr. RUSSELL ANDREWS (President of the Congress) replied to one or two critics of the report of the London committee. The compilers of that report could not insert matters which they had not got in the returns submitted to them. Mr. Victor Bonney had said that a bolder course ought to have been taken, and that in the cases in which the origin of the sepsis was not stated it ought to have been put down as intrinsic. But the committee had no right to do that; it could merely state that there was no obvious cause of infection. Professor Briggs, again, appeared to think that the committee had not behaved quite as it should with regard to pyrexia, but the committee was bound to go by its records. Several speakers had said—and he fully agreed—that in ante-natal supervision lay the chief hope of prevention. He had been interested in Professor Whitridge Williams's view about treatment in severe cases. It was a gloomy view, but it recalled to him what the late Dr. Herbert Williamson had said three or four years ago. Dr. Williamson had asked him what he thought was the treatment in such cases, and he had replied, "To

my mind, nursing, and look out for pus," to which Dr. Williamson replied, "Well, it is a gloomy view, but I absolutely agree with you." It appeared that many of the treatments suggested were not necessarily of any great avail. He added that as one responsible for the arrangement of the discussion his principal regret was that the time limit should have prevented Dr. C. E. Douglas from developing fully his admirable survey of the subject as a general practitioner.

The CHAIRMAN (Dr. Gemmell), in closing the discussion, said that he thought obstetricians ought to be extremely careful about the views they advanced on the question of autogenous or non-autogenous infection. The lay mind, especially the legal mind, was always on the look-out for some reason for saying, "There you are; it is your fault." To say that puerperal sepsis was autogenous was to a certain extent dangerous, and to proclaim the opposite view might be also dangerous, so that until the question was further elucidated it was well to exercise some reserve in the expression of opinion.

The three remaining sessions of the Congress were devoted to communications and discussion thereon.

Prolapsus Uteri.

Professor W. W. CHIPMAN (Montreal) read a paper on prolapsus uteri, which he described as a sacro-pubic hernia through the fibrous diaphragm of the true pelvic floor. In common with all hernias, it had a canal of descent, a sac, a sac-content, and sac-coverings or wall. It was the inclusion of the important organs—namely, the uterus, the bladder, and the anterior wall of the rectum—in this sac-covering or wall that had formerly misdirected the attention. This sacro-pubic hernia was a sliding hernia, a *hernie par glissement*. The essential part of the pelvic floor was the fibro-fascial hammock, while above was the accessory support of the peritoneal ligaments, and below the accessory support of the sphincteric layer. The speaker illustrated the support of the uterus by the analogy of a girl seated in a swing, the seat the fibro-fascial hammock. She was steadied in this seat by her arms grasping the ropes above—these arms were the peritoneal folds or ligaments. There was a foot-rest below which, in the analogy, was the sphincteric muscular layer of the pelvic outlet. He then showed in lantern slides the operation which was employed in Montreal. It consisted in the exposure of the fascial cleft, the replacement of the viscera, and the radical cure of the hernia. It was a simple operation, he believed it was anatomically sound, and during the past ten years it had given satisfactory results. He made no claim to special originality. What he brought forward was rather a surgical synthesis, gathered here a little and there a little, and combined into a definite procedure.

Backward Displacement.

Dr. BETHEL SOLOMONS (Dublin) communicated the results of a questionary sent to patients on whom he had performed the subperitoneal Gilliam operation during the last six years. He referred to the divergent views held with regard to the treatment of backward displacement, and to the many symptoms dependent on this displacement. His object in making an inquiry as to the after-results of this operation was to find out if these symptoms had been relieved, to obtain knowledge as to pregnancy after the operation, and especially as to whether there had been difficulty in labour; also to find if the uterus remained in the suspended position, and if there were any untoward symptoms following the operation. Letters were sent to 235 patients upon whom an operation had been done more than a year previously, and answers were received from 176. Of this number, 107 had complained, previous to operation, of some form of backache, and 101 of these now reported relief of this symptom. In the series of unmarried women there were 6 whose cervices had been dilated without relief of symptoms, and these had been cured since the Gilliam operation was done. Of the 176 women who replied, 67 had had full-term children since the operation without trouble in labour; 3 had had both children and miscarriages, and 3 had had miscarriages alone. In no case had displacement of the uterus occurred, and in one case only was slight discomfort reported, probably due to a pull on the ligament. He insisted strongly on the use of silk as suture material; if catgut were used there would be a recurrence of the displacement.

In a brief discussion the advisability of performing an abdominal operation as a matter of course for retroversion came in for criticism. Professor B. P. WATSON referred to the difficulty of diagnosing the real cause of the backache or other symptoms in such cases. One of the commonest causes was cervical laceration, with catarrh, in parous women. He believed that in most cases of retroversion which gave rise to symptoms, the backache was not due so much to the retroversion as to the associated prolapse, and a great many of these cases could be relieved by an operation such as Dr. Solomons had described. Mr. LEYLAND ROBINSON said that three or four years ago Dr. Gemmell and he published the results of 220 cases in which the operation of ventrofixation had been performed—an operation which, he gathered, Dr. Solomons regarded with disfavour. Of these patients 179 described themselves as cured, and although 41 others complained of symptoms a closer analysis showed that only six or seven were possible failures; moreover, 68 of the patients had had 108 children without the slightest obstetric difficulty. Professor C. G. LOWRY mentioned the frequency of dyspareunia among women who had chronic backward displacement. Dr. SOLOMONS, in reply, said that he did not perform an operation in every case of backward displacement, and he agreed that it was wrong to operate in the absence of clear indications. In ceasing to perform the ventral suspension operation he had followed the teaching of Howard Kelly; this operation could be done successfully by individual operators, but students watching its performance never seemed to get the correct technique, and disasters followed.

Premature Separation of Placenta.

Professor J. WHITRIDGE WILLIAMS (Baltimore) showed lantern slides of a specimen of placenta prematurely separated and gave an account of the case. The patient was aged 33, pregnant for the third time. She was seen in the out-patient department eighteen days before the accident, when she was in normal condition. On admission to the hospital later she had a pulse of 140, a temperature of 101°, low blood pressure, and haemoglobin content of 32. A diagnosis of premature separation of the placenta, with concealed haemorrhage, was made. Hysterectomy was performed and the unopened uterus removed, but the woman died of shock, with all the appearances of intra-uterine haemorrhage. The autopsy showed that haemorrhage could hardly be the cause, and he was inclined to believe that as a factor in producing shock the dissociation of the muscle fibres of the uterus played a very important part. He added that out of 9,000 admissions to his hospital there had been 57 cases of premature separation of the placenta and 64 cases of placenta praevia. Premature separation of the placenta was, therefore, a fairly common condition. His analysis related only to 40 of these cases, among which there had been 3 maternal and 29 foetal deaths. In these 40 cases in no instance was there an unusually short cord, and there was no sign of torsion; a microscopical examination was made in every instance, and there was no sign of decidual endometritis. Syphilis played no part in this condition; a Wassermann test was carried out on 37 of the women, and was negative in all but 3 cases. It was said that albuminuria played a part in causation, but only 15 of these women showed any signs of albuminuria before or after the accident. Of the three women who died, two came to autopsy, and in neither case was there any sign of toxaemia; the liver and kidneys were normal.

Professor P. B. WATSON thought that the separation of the placenta was not the initial process, but that haemorrhage into the wall came first, and the separation was the mechanical result. The lesion was really of the nature of an infarction. Some years ago he had a case of spontaneous rupture of the uterus, and there the histological picture of the uterine wall was exactly the same as that

found in cases of accidental separation of the placenta, and it was a question whether the two conditions were not analogous. If the infarction of the uterine wall occurred in sufficient degree at an area other than the placental site rupture might take place, and if at the placental site there might be premature separation. Dr. R. H. PARAMORE suggested that just as coitus in late pregnancy might be the cause of puerperal sepsis, so it might be the cause of premature separation.

Endometrioma.

Professor A. DONALD (Manchester) brought forward a clinical study of endometrioma. He surveyed 108 cases, distributed among six gynaecologists, in all of which cases operation had taken place during the last four years. Of these patients, 16 were under 30 years of age, 46 were aged between 30 and 40, and 46 were over 40. Of the 93 who were married women, 37 were nulliparae, 22 had one child, and the others more than one. The date of the termination of the last pregnancy in 35 cases was over seven years previously. By far the most important symptom of the condition was dysmenorrhoea, which was present in 70 per cent. of the cases; menorrhagia was present in 57 per cent., leucorrhoea in 38 per cent., and backache in 28 per cent. There was dyspareunia in 32 per cent. The most important physical sign was the thickening of the appendages, which was present in 74 per cent. The conditions found at operation included fibroids in 26 per cent. of the cases, tarry cysts in 77 per cent., adenomyoma in the recto-vaginal space in 63 per cent., and adherent rectum in 76 per cent. The operation which was done in 50 cases was panhysterectomy with removal of both appendages, and in 38 cases supravaginal hysterectomy, also with removal of both appendages. The remaining cases were treated by dissection of growth from abdomen or per vaginam, removal of one or both ovaries, or myomectomy. Of the 108 cases only one died.

Dr. K. V. BAILEY followed with an epidiascope demonstration of the pathology of the condition. He concluded that in these cases there was a primary disposition on the surface of the pelvic organs of endometrial epithelium, the result of regurgitant menstruation from the uterine cavity. In his belief this phenomenon of regurgitant menstruation was of much greater frequency than was at present supposed. It was one of the causes of dysmenorrhoea and a possible causal factor in ectopic pregnancy. The secretion prepared the surface of the pelvic organs for invasion, but the various tissues reacted in very different ways to these elements.

Treatment of Cervical Carcinoma by Radium.

Dr. MALCOLM DONALDSON (St. Bartholomew's) described the treatment of inoperable carcinoma of the cervix by radium. He distributed to members of the Congress an analysis of every one of 85 cases treated from May, 1921, to February, 1925. Of this number, 74 were hopelessly inoperable, 5 were on the borderline, and 6 were operable but for various reasons were not operated upon. Of these 85 cases, 31 were now living and 54 had died. Taking only the 58 inoperable cases which had been treated for a year or longer, 8 were living, one of whom had lived for forty-seven, one for forty-one, and one for thirty-nine months. In the vast majority of cases—85 per cent.—haemorrhage disappeared entirely within a few weeks of the radium applications, and if it returned at all did so a short time before death. In 63 per cent. of the cases ulceration cleared up entirely, either temporarily or permanently. Of those cases in which cauliflower-like growth was present, in 70 per cent. it disappeared entirely. The general condition of the patients in the majority of cases was very much improved, and in numerous instances they were able to do their work in comfort for many months, and the duration of life was prolonged in a certain number.

Dr. GILBERT I. STRACHAN (Cardiff) also described the treatment by radium of 40 cases of carcinoma of the cervix. The dose usually employed in these cases was 150 mg., inserted for twenty-four hours. The haemorrhage was the symptom most completely controlled. Considerable improvement, amounting to clinical cure, had been obtained in 17 cases. He believed that for inoperable carcinoma of the cervix radium presented the most potent therapeutic agent available.

[The papers by Dr. Donaldson and Dr. Strachan will appear in an early issue of the JOURNAL.]

Dr. T. WATTS EDEN said that these two communications showed that the use of radium at any rate relieved the sufferings of these women, and perhaps prolonged their lives. The action of radium was extremely localized, and Dr. Donaldson deserved congratulation on the plucky way in which he had tried to get his radium into actual contact with the glands. There was no doubt that with radium it was possible to destroy almost completely the local growth, but no effect might be produced on the distant parts or upon the involved glands. It almost looked as if surgery had said its last word about cancer of the cervix. The extended operation had been carried to a point from which, he imagined, no further advance was possible. It would be necessary to look to radium alone in cases in which an operation could not be done. At Charing Cross Hospital he had used radium in a few cases of cancer of the cervix on which it was intended to operate. He used it in the old-fashioned way—now generally abandoned in favour of a better envelopment by tubes in different positions—of simply putting the tube in the cervical canal, but the local improvement that took place struck him as very unusual. Not only did the ulcerated condition clear up, but the mobility of the uterus was very greatly increased. He believed that the future treatment of cancer of the cervix lay in the combination of radiology and operation. It might be found that if cases were irradiated before operation more satisfactory results would follow from the surgical procedure. Possibly deep *x*-ray therapy might prove more efficient than radium in dealing with the deep-lying glands.

Professor CARLTON OLDFIELD said that after some experience he was not inclined to try again the treatment of an operable case by *x* rays, but he thought it worth while to treat by this method cases not operable. One or two speakers mentioned that pain followed radium application, but Dr. DONALDSON, in his reply, said that this was only a fleeting manifestation.

Albuminurias of Pregnancy.

It was unfortunate that the only two papers read by women at the Congress had to be crowded into the last half-hour of the second day's session, with no opportunity for adequate presentation or discussion. Dr. AGNES BENNETT (Wellington, N.Z.) spoke on the albuminurias of pregnancy as studied in the State maternity hospitals of New Zealand. She said that in 1923 the New Zealand Branch of the British Medical Association arranged with the health authorities that eclampsia should be notifiable, like infectious diseases. She had had access to forty-nine of the notification forms returned by forty-one different practitioners, and the survey showed the extraordinary variety of the treatment followed, the small amount of experience of the condition on the part of the individual practitioner, and the high mortality of Caesarean section. In these State maternity hospitals eclampsia and albuminuria were the causes of the largest number of deaths, both maternal and foetal. In 1920-24 24 per cent. of all puerperal deaths registered were due to puerperal albuminuria and convulsions. Dr. Bennett described the ante-natal treatment, whereby some albuminuric cases had been resolved by careful dieting and had come to natural labours. One of the principal things which had come before her in this work had been what she termed "invisible oedema," and she found on a recent visit to the Mayo Clinic that there also they were getting out most interesting pre-natal charts in which, in practically every case, albuminuria had been predicted by an undue rise in the weight chart.

Toxaemias.

Professor A. LOUISE MCILROY, with Dr. E. PILLMAN WILLIAMS, discussed the toxaemias of pregnancy from their clinical and chemical aspects. Professor McIlroy, under the compulsion of the Chairman's time-signal, had to condense

her voluminous paper so drastically that it is doubtful whether those who listened to the shorn presentation appreciated the great amount of work it involved. She said that of the principal disposing causes of toxaemia a chronic intestinal condition was found in the majority of cases. Dysmenorrhoea had been noticed in the history of a number of these cases. In a few cases disturbance of vision, even to blindness, had been found. She discussed first toxaemias without albuminuria (vomiting, headaches, etc.), and then the albuminurias, including nephritis, cystitis, and pyelitis, and others, after which she spoke of the clinical significance of the symptoms and signs of toxaemia, the chemical significance of the examination of the blood and urine, and, finally, the results of toxaemia upon the ovum and foetus. One special point was the question of the induction of abortion as a result of the chemical findings. Abortion was a confession of failure in treatment. The indications for the induction of abortion were a persistent high blood pressure (180-200 Hg), blood urea exceeding 40 mg., bad ratio in urea concentration, also increase of albumin in quantity and diminution of urine. Out of 172 cases covered by her survey, in only three had abortion to be resorted to—one for novarsenobenzol poisoning, one for pyelitis (the other kidney having been removed for calculus), and one for placenta praevia.

Menstrual Changes.

Dr. WILFRED SHAW read a paper on the relationship between ovulation, corpus luteum formation, and menstruation. He described some work in which the endometrium and ovaries of women who were menstruating regularly were examined. The date of occurrence of the earliest premenstrual changes was found. The ovaries were examined for early corpora lutea, and the date when ovulation occurred was deduced from this investigation. The structure of the corpus luteum was examined, and the changes taking place during menstruation and pregnancy were followed. It was shown that a relationship existed between the maturity of the corpus luteum and the development of the premenstrual changes. Degeneration of the corpus luteum was found to occur during menstruation. Ovulation took place at or about fourteen days from the menstruation and the corpus luteum was formed. If pregnancy occurred the corpus luteum persisted, the period was missed, and the premenstrual endometrium became the decidua. If pregnancy did not occur the corpus luteum degenerated, and the degeneration of the premenstrual endometrium followed, to be manifested by the phenomenon of menstruation.

Implantation of the Ovum.

The final event of the Congress was a lecture by Professor J. H. TEACHER (Glasgow) on the implantation of the human ovum. He gave a masterly description, illustrated by the epidiascope, of the comparative embryology, and drew particular attention to the nature of the closing mechanism of the decidua capsularis, the relations between the maternal blood vessels and the ovum in the earliest known stages, and certain theoretical considerations relating to the nutrition of the ovum prior to implantation and to the process of implantation. Professor Teacher remarked that the human ovum showed an immense amount of individuality. It differed from any type known to comparative study, and in fact the process of embedding and union with the maternal organism varied greatly even in members of the same group. There were an infinite variety of ways in which union between the ovum and the mother was obtained. It was shown many years ago that fertilization and implantation did not correspond to any part of the cycle in particular, but might occur at various points. There was fair agreement now that insemination in the higher mammals was generally followed within a very short time—an hour or two—by fertilization. Probably the rupture of the follicle only coincided with insemination, and the fertilization occurred very rapidly after that. Another very interesting point was that a good many of the ova must be embedded after the end of the interval. It was evident that it was not the implantation of the ovum which stopped menstruation. His own theory was that what stopped menstruation was fertilization. From certain observations which he had been fortunate enough to have opportunity to carry out it appeared that implantation must have occurred from the third to the sixth day after the due date of the menstrual breaking down, and he thought it followed necessarily that fertilization must be the cause of the arrest of the cycle. It seemed unthinkable that so momentous an occurrence as fertilization should not in some way be communicated to the body as a whole. He had no doubt that it influenced the development of the endometrium; it must also influence the development of the corpus luteum. It seemed probable that when the spermatozoa entered the ovum there was a tremendous activity on the part of the ovum, which threw out some stimulating secretion upon being fertilized.

Visitors attending the Congress were received at various maternity hospitals and other institutions in London, and another feature of the Congress was a pathological exhibit arranged at the house of the Royal Society of Medicine.

Reports of Societies.

IMMUNIZATION AGAINST SCARLET FEVER.

AT a meeting of the Section of Epidemiology of the Royal Society of Medicine on April 23rd, with Dr. JOHN C. MCVAIL in the chair, the subject of immunization against scarlet fever was brought forward by Dr. MONCKTON COPEMAN of the Ministry of Health, who recapitulated the recent work on this subject by Drs. George and Gladys Dick, which was discussed in a leading article in the JOURNAL of last week (p. 792).

Dr. Copeman said that in this country scarlet fever, fortunately, was nowadays a much less serious disease, *qua* mortality, than was the case in his own earlier experience, but in America it still ranked high as a fatal malady among children under 9 years of age. During a recent official visit to New York he was afforded an opportunity of seeing the work on immunization at the Willard-Parker Hospital under the direction of Dr. Zingher, assistant director of the Public Health Department, based on the test given by Drs. Dick of Chicago. The test exhibited many analogies to the Schick test in diphtheria. In a series of papers the Dicks had set out the results of their study of the bacteriology of scarlet fever, showing, apparently, that a haemolytic streptococcus, long recognized in the naso-pharyngeal passages of patients with scarlet fever, was probably the agent of the disease. Experimental work on animals had not proved successful, and the tests had to be made on human volunteers. Incidentally it was remarkable that in America relays of such volunteers were forthcoming without any difficulty. A number of volunteers were obtained who had lived under country conditions all their lives and had had no history of scarlet fever; the process of testing them was described in detail in the last issue. They were inoculated with a culture after it had passed through the Berkefeld filter, and all remained well; after an interval they were inoculated with the unfiltered culture, and one of them developed scarlet fever. The results appeared more rapidly than in the Schick test, and pseudo-reactions were more frequent, so that control on the opposite arm was of great importance. The lecturer showed coloured slides illustrating the typical Dick reactions. It was found that when a patient who had been inoculated contracted scarlet fever subsequently the area occupied by the previous positive reaction was marked by a paler area surrounded by a ring of intense rash. With regard to the reaction likely to be obtained, in the earliest stage of life a child apparently acquired a transient placental immunity from the mother, so that up to 3 months of age the Dick test was likely to afford a negative result. In the case of many hundreds of children from the congested slum areas Dr. Zingher found positive Dick tests in 32 per cent., whereas in better-class areas or country districts the proportion of positive reactions might be as high as 88 per cent. In a small proportion of inoculated persons constitutional symptoms, including a scarlatiniform rash, had been observed. In the case of 274 children recently retested at three institutions in New York 167, or 61 per cent., were

found to have become immune. No inoculated child admitted to hospital had so far contracted scarlet fever even though taken into the scarlet fever wards.

Speaking of the work already done on this subject in England, Dr. Copeman said that some research had been arranged at the South-Western Hospital, London, and elsewhere. The haemolytic streptococcus was found to be almost always present in the throat in cases of scarlet fever. Toxins had been prepared, and patients in the initial stages of scarlet fever were found to be positive; towards the end of the second week the majority of them became negative reactors, indicating immunity to the toxin. The medical officers' committee on scarlet fever, appointed by the Ministry of Health, came to the conclusion that it was desirable that further study should be undertaken under the co-ordinated direction of a team of expert clinicians and pathologists, and it was hoped that in time the resources of the Metropolitan Asylums Board would be available. Pending this, however, the committee decided to adopt a scheme, outlines of which were submitted by some of those working in the Ministry's pathological laboratory, and certain preliminary work was decided on. Meetings were held at Liverpool and Manchester, in each case with the medical officer of health and others concerned in the epidemiological service, and a meeting of all the research workers had been held at the Ministry's laboratory to ensure that the work carried out in the different laboratories should be on comparable lines. It was also resolved to apply the Dick test to patients admitted for scarlet fever to the Fazakerley Hospital, Liverpool, and the Monsall Hospital, Manchester. In response to a request specimen strains of the haemolytic streptococci of scarlet fever origin were sent from New York, but it was impossible for any agglutinating serum to be sent because it was being used in New York as fast as it was being produced. Reports of the work in hand were now being received, and at a later period a full official account of the work would be published. It would be premature to express any opinion as to the ultimate outcome, in view of the difficulties of such an investigation: the problems were much more complex than in the parallel work on diphtheria. Difficulties with regard to the specific identification of the micro-organism did not arise in diphtheria, but in scarlet fever, although a considerable body of evidence had accumulated to show that haemolytic streptococci were the responsible agents, the variety of the strains isolated had rendered it difficult as yet to determine whether one particular strain or any of several varying strains was specially responsible.

In conclusion, Dr. Copeman directed attention to the nature of the population which it was sought to immunize. Experience had clearly indicated in the course of work on diphtheria that where a certain general basis of immunity already existed it was comparatively easy to increase the extent of that immunity to a sufficiently high level. On the other hand, in certain institutions which for years had been free from this disease, because the children came in chiefly from rural areas, the immunity was found to be practically non-existent, and the building up of immunity was difficult and required a long time. It remained to be seen, from the work now proceeding at various centres in this country, whether the response to immunization work in scarlet fever would run on similar lines. He added that he had been greatly impressed by what he had learnt in New York of the practical working of the Dick test, and his opinion had not been altered to any appreciable extent by the use of the test in this country so far. But the attainment of anything like complete immunity appeared to be decidedly more difficult of accomplishment in scarlet fever than in diphtheria, and there seemed to be some reason for believing that any immunity thus produced was by no means permanent.

Dr. F. GRIFFITH supported Dr. Copeman's remarks by showing some lantern slides and specimens.

Sir WILLIAM WILLCOX said it was important that information should be afforded as to what was being done in New York, and also that research should go forward in hospitals in this country. He was on the staff of the London Fever Hospital, which accounted for his interest in this matter, but, up to the present, no experimental work had been performed there on the Dick test. He was sure from what they had heard that it was a most valuable test in determining whether immunity was present or not, and it was a test of some value for diagnosis. With regard to the production of immunity, Dr. Copeman had made some interesting statements, but he had hinted that the length of time during which immunity was conferred was probably not very great. One point must be borne in mind when considering the production of immunity to these various diseases. If it was intended to immunize the child against scarlet fever by the method suggested the result would be to render the child anaphylactic to horse serum, and should the child later on develop diphtheria and require diphtheria antitoxin a rather difficult situation might arise. He thought the profession might go a little too far in using serums for immunization against all these various diseases. This applied particularly to scarlet fever, which in this country of recent years had had an extremely low mortality.

Dr. J. A. NIXON said that in Bristol the Schick test had given such ample satisfaction that all concerned were desirous of learning about the possibility of detecting susceptible and non-susceptible cases of scarlet fever also, and of immunizing the susceptibles. He was not in the least deterred by the dangers of anaphylaxis which Sir William Willcox had pointed out. During the war repeated doses of antitetanic serum were given to wounded men, with no untoward results. He was disappointed that the Schultz-Charlton reaction would not apparently be available for immediate diagnosis; he had hoped that this might afford help in difficult cases, but evidently the profession would still have to rely mainly on clinical signs.

Dr. E. W. GOODALL (North-Eastern Hospital) said that the scheme which the Ministry of Health proposed, and which would eventually bring in all the leading fever hospitals of the country, was the right one; hitherto similar work had been limited, to its disadvantage, to one or two institutions. He also made some interesting statements on anaphylaxis, and pointed out (as also did Dr. Copeman) that Sir William Willcox had been under a misapprehension. As Dr. Copeman stated, the material used should have no horse serum in it, and practically no protein, so that anaphylaxis was unlikely to occur.

Dr. BLAKE (North-Eastern Hospital) said that some work had been done at his institution, but so far the type of scarlet fever available had not been severe enough to furnish ground for a true test. Dr. F. THOMSON (North-Eastern Hospital) also said that he had been favourably impressed by the work so far as it had gone. Dr. W. MAIR suggested that scarlet fever arising in an epidemic form was something more than a streptococcal condition. The solid fact that emerged from this American work was that the rash was a streptococcal rash, and that the streptococcal element in scarlet fever was much more important than had been supposed. Sir WILLIAM HAMER said that he was rather in the position of the man in the New Testament: "I believe; help thou mine unbelief." He recalled that, forty years ago, Klein isolated from patients suffering from scarlet fever a streptococcus which he called the *S. scarlatinae*. It seemed as though there were periodical epidemics of belief that the organism of scarlet fever had at last been discovered.

Dr. COPEMAN, in reply, said that he was glad this work had brought into prominence again the work of Klein. He could remember the time when it was scoffed at, but it had a very sound basis. It was true that scarlet fever was not now a serious disease in this country, though it was quite possible that at some time in the future a wave of more virulent infection might arrive. But even as matters stood this American work was likely to be useful when the possible complications of scarlet fever were considered. It was well known that some of the most severe complications of a disease were not unlikely to follow an exceedingly mild manifestation of the disease itself, and in the case of scarlet fever such complications as otorrhoea, rhinitis, and nephritis were the bugbear of the epidemiologist.

BACTERIAL URINARY INFECTIONS.

A MEETING of the Section of Urology of the Royal Society of Medicine was held on April 23rd, with the President, Mr. CYRIL A. R. NITCH, in the chair.

Professor LEONARD DUDGEON opened a discussion on bacterial infections of the urinary tract. He considered first a group of bacilli which resembled *B. paratyphosus* in appearance, but differing from that organism in being haemolytic. This infection clinically resembled paratyphoid and was often diagnosed as such. The causal organism could often be recovered from the intestine and proved by serological tests to be identical with that in the urine. The disease, though relapses did occur, was not so intractable as the chronic form of *B. coli* urinary infection. Vaccine treatment was generally contraindicated as the sufferers exhibited a remarkable hypersensitiveness. Charts were shown to illustrate the type of fever in untreated cases, and the effect of vaccines. The next organism to be considered was the *B. coli*, of which there were two varieties: A, haemolytic, and B, non-haemolytic. It was remarkable that 70 per cent. of coli urinary infections in the male were of the haemolytic variety, whereas in the female the proportion was reversed. He had no doubt that the origin of the infection was from the intestinal tract, and had frequently isolated an identical organism from the faeces and from the urine. Experimentally it was difficult to produce a urinary *B. coli* infection by intravenous inoculation, so long as there was no obstruction in the urinary tract. Vaccines were useful only in the haemolytic variety, and hypersensitiveness to vaccines occurred in many cases. Often after the acute symptoms had subsided, the organism was still present in the urine, and when relapses occurred it was almost always the same organism. From this he maintained that so-called reinfections were in reality relapses. *B. proteus* infections might be very severe. The bacilli could be recovered from the blood stream and the intestinal tract in addition to the urine, the latter becoming characteristically alkaline and containing large quantities of mucus, pus, and triple phosphates. Vaccines might be tried after the acute stage of *B. proteus* infection had passed off. The *Staphylococcus albus*, occurring in conjunction with pus in the urine, was an almost certain indication of the presence of a calculus.

Dr. E. LEPPER described a number of experiments in the production of lesions in the kidney by intravenous injection of *B. coli*. It was found that lesions could easily be produced if the ureter were obstructed for even a short time (experimentally this was done by means of an elastic band which produced no permanent effect upon the ureter), whereas no effect was produced by the injection of large doses of *B. coli* in the absence of obstruction. She concluded that compression of the ureter led to dilatation of the pelvis with engorgement and stasis, and minute haemorrhages from the veins. In these circumstances the organisms gained access to the renal tissue. Sections of the lesions produced in rabbits were exhibited on the epidiascope, some of which showed embolism of small arteries by solid masses of bacilli.

Sir JOHN THOMSON-WALKER, who discussed the diagnosis and treatment, referred first to the prodromal symptoms. For four or five days before a bacterial infection of the urine became manifest there was malaise, hypersensitiveness to heat and cold, irregularity of the bowels, and increased frequency of micturition. When the disease became established the frequency became great, and finally passed into the stage of strangury. There was a rigor, the temperature shot up to a high level, the urine became cloudy and not infrequently contained blood. The bowel was distended, there was obstinate constipation, and often acute abdominal pain. The kidney often enlarged so much as to give rise to a suspicion of pyonephrosis, which was especially to be suspected if the urine was clear. Localizing symptoms—such as pain in the loin, enlargement of the kidney or prostate—were present in the majority of cases, but occasionally were totally absent. The course of the diseases was very variable, and relapses were common. Puzzling cases were: (1) those in which there was high fever, often accompanied by severe nervous symptoms and no signs other than bacilluria; (2) those in which there was pain only—it was to be remarked that actual renal colic might occur in this disease without any calculus; (3) those in which haematuria was the main symptom; and (4) those in which the urine was sterile. Clinically three types of the disease were recognizable: (1) recurrent pyelo-cystitis, (2) cystitis, (3) bacilluria. The second was comparatively rare, since the real source of the trouble was often found in the renal pelvis. In 100 consecutive cases diagnosed as cystitis the urine from both kidneys was sterile in only 42; in 30 cases one kidney was infected, and in 28 cases both kidneys. The clinical type known as bacilluria was the variety which gave rise to chronic toxaemia, with fibrositis and various joint troubles; these cases were often regarded as being neurasthenics. The infection having its origin so frequently from the bowel, prophylaxis should start there. Drastic purgation, which removed the normal protective coat of mucus and possibly damaged the epithelium, was to be avoided. He had seen bacilluria follow drastic purgation, Plombières treatment, and occasionally the removal of a normal appendix. Urinary infections were apt to follow operations on the bowel and female pelvic organs. In such cases he advocated a preliminary course of urinary antiseptics as a prophylactic measure. The treatment of these conditions was governed by the reaction of the urine. Urotropine acted only in an acid medium, and in acute conditions there was little time for it to give off formalin as the bladder would not tolerate an acid urine. He had no experience of the new compound hexamethyl resorcinol. In alkaline urines methylene blue and certain other dyes, among them mercurochrome, exerted an antiseptic action, but were not nearly so powerfully antiseptic as urotropine in acid urines. He advocated washing out the renal pelvis only in cases in which there was no infection in the lower urinary tract, and no urinary obstruction, an exception to the latter being made in the pyelitis of pregnancy.

METABOLISM AND THE SYMPATHETIC SYSTEM.

IN the Section of Medicine of the Royal Society of Medicine on April 28th two communications were made—one by Dr. Erich Leschke, professor of medicine, University of Berlin, on metabolism and the sympathetic system, and the other by Dr. O. Leyton, on a condition to which he gave the name of "hypoglycopyresis." Dr. ROBERT HUTCHISON presided.

Professor LESCHKE began by saying that the whole interest of clinicians, pathologists, and physiologists of recent years had been absorbed in the study of the well marked and fundamental influence of the endocrine glands upon metabolism. At the time when he began his own experimental and clinical work on the hypothalamic centres of the autonomic nervous system and their influence on metabolism it seemed heresy to suggest that many troubles, like diabetes insipidus, dystrophia adiposo-genitalis, and some forms of glycosuria, might be of nervous rather than glandular origin. His line of research had, however, now been justified, and evidence had been brought together showing the importance of the role of the sympathetic centres in the diencephalon in the regulation of metabolism.

He spoke first of his search for clinical evidence as to the causation of diabetes insipidus. His work had led him to abandon the pituitary theory and to look for some other pathogenic factor. In clinical pathology the alterations which led to diabetes insipidus were chiefly those involving the infundibular region and the tuber cinereum. In one well known case of diabetes insipidus occurring after a gunshot wound, the bullet was found not in the sella but in this region. A few cases had been reported where diabetes insipidus arose after an attack of epidemic encephalitis; he had also seen the disappearance of diabetes insipidus after encephalitis, and it was known that epidemic encephalitis was a cerebral disease, not a glandular one. The frequent occurrence of diabetes insipidus after injuries to the skull was explained by the fact that the infundibular region was one of the most exposed parts of the brain to injury. He instanced the case of an officer who, after

a shell explosion, wounding his forehead, immediately developed bitemporal hemianopsia and persisting diabetes insipidus. In many of these cases diabetes insipidus persisted for life, and the presence of nervous troubles, with the absence of real pituitary symptoms, was in favour of the theory he had advanced—that is, the diencephalic as against the pituitary theory. He had dwelt perhaps somewhat too long on diabetes insipidus, but it seemed to him to afford an interesting example of the regulating influence of the autonomic nervous system on metabolism. Disturbance of this regulation led to polyuria, or, in slighter cases, only to diminution of urine concentration. It was of the greatest importance to make a thorough histological examination in cases of diabetes insipidus coming to autopsy. He had seen one case from his own clinic with normal hypophysis and exclusive degeneration of the supra-opticus. Similar cases had been published in Paris. Histological examination in these cases would make for a better localization of the sympathetic "centres" (if it was allowable to use this inexact term) in the diencephalon or interbrain, and to establish their relation to the pituitary body.

Professor Leschke came next to a discussion of dystrophia adiposo-genitalis. There was hardly any part of the hypophysis or its neighbourhood which had not been thought of as furnishing the cause of this interesting anomaly. With regard to the posterior lobe, he had an impression, from animal experiments and from a case of isolated posterior-lobe destruction by an epithelioma, that it had not much influence either on growth or on metabolism. Destruction or atrophy of the anterior lobe nearly always gave rise to genital atrophy. Obesity following hypophysectomy had been observed by Cushing and others, but lesions of the infundibular region could not be excluded, the more so as Victor Horsley in his experiments did not obtain obesity. On the other hand, all the classical phenomena of Fröhlich's syndrome could experimentally be reproduced by mere lesion of the diencephalon between the tuber cinereum and the corpora mammillaria. The *post-mortem* findings in more than ninety cases clearly demonstrated how unsatisfactory the pituitary hypothesis was. In some cases the lesions had been found in the anterior lobe, in others in the posterior, in a third group in the pars intermedia and ductus infundibularis, and in more than twenty of the cases the pituitary gland had been found to be quite normal, or so slightly affected that it could not be regarded as impaired functionally. The pituitary theory, which formerly held the field, had now, he thought, weakened. His own view was that the diencephalic centres always played the foremost part in the development of dystrophia adiposo-genitalis, but he did not deny that the pituitary body had a great influence upon the function of these centres and that its internal secretion was indispensable, not only for normal growth and sexual development, but also for normal metabolism. It was more than probable that the sympathetic centres regulating metabolism and sexual development were not identical, though closely related. He mentioned one variation of dystrophia adiposo-genitalis which he had met with in four cases; this included a most characteristic skin pigmentation, hundreds of small naevi, like those of Recklinghausen's disease, from which the condition was distinguished by the absence of neurofibromata and the presence of signs of certain endocrine and sympathetic disturbances. This syndrome, which he was convinced was not uncommon, he proposed to call "dystrophia pigmentosa."

Finally Professor Leschke mentioned diabetes mellitus. It might seem wrong to associate the diencephalon with diabetes, now that the pancreatic origin of diabetes had been definitely proved by the success of insulin therapy, but pancreatic activity, like any other glandular function, was under the regulating influence of the sympathetic nervous system. He was convinced that disturbance of sugar tolerance and blood-sugar level was due to involvement of the interbrain rather than to the derangement of pituitary function. Among 190 cases of acromegaly he had found glycosuria or hyperglycaemia in 82. He had also found a true combination of diabetes mellitus and insipidus. The impairment of urine concentration was hidden by the presence of sugar, which gave apparently normal figures of specific gravity. Both diabetes and obesity had been observed to develop after tumours and inflammations of the diencephalon and its base. There seemed no doubt that disturbances of the regulative function of the interbrain between the tuber cinereum and corpora mammillaria gave rise to lowering of carbohydrate metabolism and obesity, those of the corpus striatum to hyperglycaemia and glycosuria. His general conclusion was that a close relation existed between endocrine glandular activity and sympathetic nervous regulation. He pleaded for a more synthetical point of view, like that of the Hippocratic school in olden times, which had been neglected in the past century in favour of the analysis of symptoms. He was quite aware of the hypothetical character of many of the views he had expressed, but he thought it was well if at the base of scientific progress there was some imagination—and even some phantasy.

Dr. F. PARKES WEBER said that he had recently had the opportunity of examining a few cases allied to the rather rare types referred to by Professor Leschke. Since January, 1923, he had occasionally seen a man (Hebrew), then aged 39 years, with retinitis pigmentosa, obesity, and sexual impotence—an isolated (non-familial) case, and not a typical case of dystrophia adiposo-genitalis. His attention had been specially drawn to the subject by Solis-Cohen and Weiss of Philadelphia, who had published their family group of similar cases in the current number of the *American Journal of the Medical Sciences*. At a recent meeting of the Neurological Section of that society Dr. Douglas McAlpine had demonstrated an isolated case of retinitis pigmentosa with hypopituitarism and polydactylism in a boy, aged 15 years. Recently Dr. Adolphe Abrahams had shown him a man, aged about 40, whose whole body was covered with small blackish pigment naevi (lentigines), and who had a peculiar excess of the soft parts of his fingers and toes, with ulnar deviation and overextensibility of the fingers, but not the typical dystrophia adiposo-genitalis mentioned by Professor Leschke. He (the speaker) regarded this case as allied to Recklinghausen's disease and tuberous sclerosis of the brain, the patient having likewise a gradually progressive hemiplegia of the right side which might be explained in that way. The pigment naevi might be regarded as taking the place of the facial naevi of the adenoma sebaceum kind which had been noted in a good percentage of cases of tuberous sclerosis. With regard to the peculiarity of the patient's fingers and toes, he could not help thinking of the rare cases of clubbed fingers of congenital or early developmental origin, which might be familial; these he had recorded in the BRITISH MEDICAL JOURNAL in 1919 (ii, p. 379). With regard to the consideration of the two rare combination types just referred to, he drew attention to the following points: the retinitis pigmentosa might be represented by an atypical pigmentary degeneration of the retina; the dystrophia adiposo-genitalis might be incomplete and atypical; the symptoms of Recklinghausen's disease might also be incomplete and atypical; the other occasionally associated developmental abnormalities, such as polydactylism or congenital malformation of the heart, might be various in kind or degree. He believed that the association of polydactylism with definite or incomplete dystrophia adiposo-genitalis and retinitis pigmentosa was to be regarded as analogous to the occasional association of congenital cardiac abnormalities with mongolism.

Dr. W. LANGDON BROWN was inclined to general agreement with Professor Leschke's view as to the part played by the hypothalamus—all the observations of recent years tended in that direction—but it was quite possible that the pituitary was the mechanism through which the hypothalamus acted. It was well known that pituitrin was a powerful antidiuretic. Injected into the blood stream it would hold up the excessive output of urine for a considerable time. Was it probable that this glandular structure would have been placed in such close relation with the hypothalamus if there was no functional connexion also? The pituitary was quite capable of acting without the nervous system, but he would suggest that it was put into action through that system, and that some of the difficulties

encountered in interpreting results were capable of being resolved along the lines of that hypothesis. One of the great difficulties in all these pituitary cases was the very partial grouping of the symptoms. It was well known how extraordinarily varied the grouping of symptoms might be in what appeared to be pituitary lesions, and he thought that Professor Leschke's suggestion that a great deal of the regulation of the water metabolism was governed by the balance between the tissues and the blood was in harmony with the general trend of physiology. He recently had a case which came for treatment for diabetes insipidus. No pituitary lesions were found. Some months afterwards the patient came up again for cerebral symptoms, obviously tumour, probably pituitary, and at that time she had only a very moderate polyuria. This patient ultimately died, and was found to have a tuberculoma of the pituitary body. It was an interesting fact that the first suggestion as to the nature of the lesion came from the diabetes insipidus. That case, of course, did not prove or disprove the theory, but it showed that as the lesion advanced in the pituitary the diabetes insipidus became a less marked feature. He was quite prepared to believe that a great many of these effects came about through the sympathetic nerves, like the association of the pineal gland and sexual precocity, which was not an endocrine association at all, but probably came about through nervous structures. He felt that there had been rather too much made of the pancreatic theory. He would have preferred to put it, so far as the pancreas was concerned, in this way, that not all cases of diabetes were pancreatic in origin, but that they would become pancreatic if the hyperglycaemia was allowed to persist. He was interested to find that Professor Leschke had evidence pointing in this direction. As to the association between diabetes mellitus and diabetes insipidus, it had been a common observation for the last two years that insulin very often, while stopping the glycosuria and checking the hyperglycaemia, did not check the polyuria. That was a further fact pointing to the pituitary origin of some cases of diabetes mellitus.

"HYPOGLYCOPYRESIS."

Dr. O. LEYTON, in explanation of his title, said that in the past diseases had been named either after the men who had described them or after their most prominent symptom or symptoms. He instanced the diseases to which the names of Basedow and of Graves had been attached. The disadvantages of calling a disease after a man were that it added to the burden of the memory and also that it led to confusion in different countries, where different names were adopted. Certain disadvantages also attached to the naming of a disease after the most prominent symptom, because at the beginning of the disease the symptom might not be present. Diabetes mellitus owed its name to the two signs—polyuria and glycosuria. The onset of diabetes might be insidious or acute. At present there was no proof that those cases which appeared to be acute were not really insidious, and had been aggravated by some toxaemia. When the onset was insidious there was a stage when there was no polyuria or glycosuria, but only a slight diminution in the efficiency of the carbohydrate metabolism. Such cases, he suggested, might be called by the term "hypoglycopyresis," meaning a diminution in the burning of sugar. He admitted that it was a cacophonous term, but he was open to hear suggestions for a better. An early "hypoglycopyresis" had neither polyuria nor glycosuria unless the patient underwent some pancreatic "orgy." The question naturally arose, How was the condition recognized if there was no polyuria and no glycosuria? One hoped that in the future it might be possible to recognize "hypoglycopyresis" in the descendants of diabetics, especially in obese descendants; the recognition of the condition would permit of advice being given whereby the disease might be arrested. The method adopted for recognizing this deficiency in the carbohydrate metabolism was to give injections of glucose. Dr. Leyton described his plan of injecting a measured amount of dextrose intravenously, and said that, although cumbersome, it was to be preferred to administration by the mouth because oral administration led to many fallacies, and in addition the other method was better from the point of view of the time factor, which was important. But he must warn those who gave intravenous injections of dextrose to be careful to obtain pure dextrose and to be punctilious in technique. He gave in detail observations on two cases, which he illustrated by curves. The second and perhaps more interesting of these cases came his way because the patient had a low renal threshold. Sugar had been found in his urine six months before he came under his observation, but he had no thirst to speak of and he never had polyuria. The examination for the blood sugar showed that it was not a case of diabetes mellitus, but his blood sugar rose to a certain extent after a sweet meal. It was found that his carbohydrate efficiency was 75 per cent.; in other words, he suffered from "hypoglycopyresis," not sufficiently to cause thirst or polyuria, but sufficiently to cause hyperglycaemia after the absorption of sugar in large quantities. This patient had a duodenal ulcer, and was operated upon, and on the sugar in his blood being tested some three months after operation he was found to have developed something approaching to diabetes, probably owing to the anaesthetic given him at the operation—for it was found as a rule that an anaesthetic permanently depressed the carbohydrate metabolism in mild diabetes. Dr. Leyton concluded by saying that this case and the other seemed to him to prove that there was a condition of depressed carbohydrate metabolism long before there was any true diabetes mellitus. The question was, What should it be called?

Dr. PARKES WEBER asked whether there was any relation between these cases and cases of renal diabetes—whether the two had ever occurred together. Dr. LEYTON replied that he did not think the one protected against the other. The reason one investigated these cases was because the threshold was low, but one could come across cases of so-called renal glycosuria with normal sugar-burning.

DIAGNOSIS OF THE DYSPEPSIAS.

AT a meeting of the Bristol Medico-Chirurgical Society on April 8th, the President, Dr. J. O. SYMES, in the chair, Mr. A. RENDLE SHORT read a paper on the diagnosis of the dyspepsias.

Mr. Rendle Short's observations were based on a series of 100 cases of non-malignant dyspepsia, all studied on a definite plan, verified by operation, and mostly followed up subsequently. Increased accuracy in the diagnosis of dyspepsia was due to better knowledge of physiology, disregard of haematemesis as a diagnostic point, watching the movements of the bowel by means of an *x*-ray screen, and better classification. It was now known that both the hypersthenic and the hypotonic types of stomach might exist in perfectly normal persons. In the former type the viscus emptied quickly; the patients were apt to have an excess of acid, and were "hungry folk." On the other hand, achlorhydria was not necessarily a sign of disease any more than was visceroptosis. It was now known that a nervous reflex mechanism controlled the sphincters of the alimentary canal, so that delay in any one part might cause general disturbance, producing symptoms referred to a region distant from the actual site of the disease. The minute lymph nodules, found especially along the lesser curvature of the stomach, might ulcerate and bleed. Haematemesis might be the only symptom of disease; or there might be dyspepsia due to causes outside the stomach and duodenum, and accompanied by a dangerous bleeding; or, finally, there might be bleeding from a chronic ulcer. In the series 1 in 3 of the gastric and duodenal ulcers were accompanied by bleeding, and 1 in 6 of the cases of appendicular dyspepsia. Mr. Rendle Short classified dyspepsias as functional, organic, or reflex. The functional type was not hysterical, but implied a disturbance of function, as with the acute and chronic gastritis of alcoholism, dyspepsia of phthisis, anaemia, and anorexia nervosa; all these were the province of the physician and were curable by medical means. The reflex dyspepsias were: (1) Gall-bladder dyspepsia, flatulence and vomiting being prominent, the vomiting coming especially after certain foods. Treatment with alkalis was unavailing, and there was often some gastric delay. (2) Appendix dyspepsia; pain was usually not very severe,

but continuous and worse after food, the patients often vomiting without relief of pain. (3) Undiagnosable reflex dyspepsia—pain and vomiting were not related to each other or to food. Organic disease of the stomach or duodenum might give rise to several types of dyspepsia: (1) Gastric ulcer. A definite sequence was usual, thus: food, relief, pain, vomiting, relief. The relief following a meal tended to be rather over half an hour. The pain was severe and vomiting the rule. A test meal was useless in diagnosis, but *x* rays might give great help. If, later, pain became continuous and was felt in the back, pancreatic involvement might be suspected. (2) Duodenal ulcer. Vomiting was less common, only half the cases showing it. Relief obtained by food was usually over an hour. The pain was severe, the test meal of little service, though hyperchlorhydria was the rule, and deformation of the skiagraphic duodenal cap was characteristic when present. The stomach usually emptied quickly unless stricturing had ensued, but this was a cause rather than a consequence of the ulcer. (3) Duodenal ileus might occur by itself or be a symptom of other disease: flatulence and nausea were marked, vomiting common, pain not severe, and the relation to food was obscure. The skiagram might be definite, showing great delay and distension in the second and third parts of the duodenum; duodeno-jejunostomy cured the condition. (4) Periduodenal adhesions might give rise to severe pain, even after taking water; vomiting was usual, bleeding absent, and the *x* rays showed gastric delay. (5) Gastric cancer was accompanied by great loss of appetite, and pain might be continuous. A test meal might show nothing, but *x* rays might reveal a typical deformity. (6) Pyloric stenosis, hour-glass stomach, or leather-bottle stomach might account for dyspepsia. Mr. Rendle Short showed a number of skiagrams illustrating his paper.

Diagnosis of Nasal Sinus Disease.

Dr. P. WATSON-WILLIAMS read a note on some points in the diagnosis of nasal sinus disease, showing how it was possible to differentiate between cells, using the suction-syringe method of sinus exploration. Especially might this become important when one sphenoidal sinus was very large and the other small. The large sinus might be entered from the opposite side of the nose, in mistake for the sinus of that side, and the latter thus overlooked. In certain cases, notably those with involvement of vision, this might lead to serious errors in diagnosis. The point was illustrated by a collection of lantern slides.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

A MEETING of the Section of Surgery of the Royal Academy of Medicine in Ireland was held on April 3rd, with the President, Mr. R. C. B. MAUNSELL, in the chair.

Jejunostomy in Acute General Peritonitis.

Mr. SETON PRINGLE read a paper on jejunostomy in acute general peritonitis, and referred to a previous communication in which he had advocated this operation; he stated that his recent experience had confirmed his opinion of its usefulness. He disagreed with Sampson Handley, who had recently stated that jejunostomy was inadvisable because it entailed a loss by the patient of great quantities of fluid, and required a second operation for its closure should the patient survive. From his own experience Mr. Pringle confidently asserted that neither of these objectionable results would follow a jejunostomy performed after the manner advocated by C. H. Mayo.

Mr. H. STOKES said that the procedure described by Mr. Pringle had been adopted in the Mayo Clinic about five years ago, and unquestionably in a great many cases it had been very efficacious. He had found some difficulty in getting the tube to drain. At present he had a patient on whom he had operated for septic peritonitis from perforation, using the method described. The patient was going on splendidly, and had never vomited since the operation.

Mr. A. K. HENRY asked whether the operation should be limited to cases in which there was a localized peritonitis, or where pelvic peritonitis was more definite than abdominal peritonitis.

Mr. C. J. MACAULEY said that jejunostomy had been advocated by Victor Bonney and Sampson Handley for some time. The intestine should be followed up until a heavy coil was found; if this was done there should be no difficulty in getting the tube to drain. He drew attention to the remarkable effect this method had in stopping vomiting. The opening must be made in such a way as to encourage spontaneous closure after removal of the tube. In some cases of pelvic peritonitis the obstruction did not cease with the subsidence of the peritonitis. The success of jejunostomy in these cases depended on the absorption of pelvic exudate and the power of the intestines to empty themselves. It was useless to relieve the mechanical obstruction in bad cases unless jejunostomy was performed at the same time.

Dislocation of the Semilunar Bone.

Mr. R. A. STONEY read a note on a case of dislocation of the semilunar bone, and showed a specimen.

The patient was a man, aged 40, who dislocated the semilunar bone as a result of the backfire of a motor car. The case was not seen until five months after the accident. Distinct antero-posterior thickening of the wrist was present without relative change in the position of the styloid processes of the radius and ulna. There was considerable disability, and teno-synovial creaking was obtained on the front of the wrist when the patient flexed the index finger. The bone was removed by an anterior incision; passive and active movements were commenced on the second day after the operation.

Anterior dislocation of the semilunar had been mentioned by Erichsen in 1872, and by Taffe of Brighton. Since that time several cases had been described, many of them associated with fracture of the scaphoid. The semilunar bone alone among the carpal bones had a larger palmar than dorsal non-articular surface, and consequently the bone was wedge-shaped, with the base anteriorly. In forced hyperextension of the wrist the bone was liable to be shot out between the lower end of the radius and the second row of the carpal bones. The diagnosis might be made by detecting antero-posterior thickening of the wrist, partial flexion of the fingers, and possibly tingling in the distribution of the median nerve in the hand; it was confirmed by a lateral *x*-ray examination of the wrist. If recognized early it might be possible to reduce the dislocation under an anaesthetic. If the diagnosis was not made until late it would probably be necessary to remove the bone in order to relieve the disability.

Mr. C. J. MACAULEY thought that sometimes considerable disability in the wrist arose because the diagnosis of dislocation of the semilunar bone was not made. All cases of this sort should be carefully *x*-rayed, because a good deal of trouble might be avoided if the patient was made to realize at the beginning that he had something more than a sprained wrist which would be healed in a few days. He thought there was no question that excision was the right treatment if the dislocation did not yield to manipulation.

Surgical Exposure of the Radius.

Mr. A. K. HENRY described (1) a complete exposure of the radius, (2) an exposure of the second stage of the vertebral artery, illustrating his account with anatomical preparations. In the complete exposure of the radius the skin and deep fascia were divided by an incision extending from the distal end of the biceps to the radial styloid. The biceps tendon was exposed, and a finger passed along its radial border met the loop of the recurrent radial vessels; this was divided. The three long muscles which flanked the radius could then be retracted outwards, exposing the lower part of the shaft. The upper third was exposed by peeling the supinator brevis from the bone. Division with the knife of the bicipital bursa just external to the biceps insertion gave sure access to the edge of this muscle, which skirted the bursa, but was obscured by fat and areolar tissue. The posterior interosseous nerve lay between two layers of the supinator brevis, and was raised with it by the rugine.

Mr. R. A. STONEY thought the first demonstration would be of more frequent use to surgeons than the second. The

second was extremely interesting, but he did not think it likely that many of them would often be required to perform this operation, whereas exposure of the radius was an operation which might be necessary at any time. It was very helpful to have a simple method by which injury to the posterior interosseous and radial nerves could be avoided with certainty. This was a point of very considerable surgical importance.

Mr. A. CHANCE said that, Mr. Henry's previously described methods of exposure of the humerus and femur having proved excellent in practice, he was particularly interested in Mr. Henry's suggestion regarding exposure of the radius, since he had under his care a case of new growth of the radius for which he contemplated local excision. Removal of a portion of the radius was most frequently required for fractures of the head of the radius, and he had been in the habit of adopting a posterior incision.

Mr. HENRY, replying, did not think the method he had described would be a good one for exposing the head of the radius; it was intended as a method of exposing the entire shaft.

LEGAL RESPONSIBILITY OF THE SURGEON.

LORD JUSTICE ATKIN presided at a meeting of the Medico-Legal Society, held in London on April 25th, when Lord RIDDELL read a paper entitled "The legal responsibility of the surgeon."

Lord Riddell said his object was to offer a few observations regarding certain problems of surgical responsibility in the light of modern ideas. By the wording of the Draft Criminal Code of 1880, everyone, whether a licensed practitioner or not, was protected from criminal liability for performing with reasonable care and skill any lawful surgical operation on any person with his consent, and for his benefit, providing that the operation was reasonable, having regard to the patient's state at the time, and to all the circumstances of the case. Consent might be given by the patient's guardians or relatives, if the patient was incapable of himself consenting. The extent of the consent must not be exceeded. In cases of emergency, however, the person about to perform the operation might act on his own responsibility. This exception applied when in the course of the operation the surgeon found it necessary in the patient's interest to go beyond the consent given. The rules were the same in civil proceedings for negligence, but the interpretation of reasonable care and skill was more stringent, and the consent of the patient might absolve the person performing the operation from civil liability. Prima facie, the rule as stated seemed fairly plain, but the application of general principles was often an elusive task. For instance, an abortion was an illegal operation unless the life of the mother would be endangered by allowing her to go her full time. Mortality with regard to a certain operation might be, say, 97 per cent.: was the surgeon justified in operating after explaining the danger to the patient? And would such operation on a dying man be justified, and yet improper in the case of one whose condition was not so grave? If the surgeon was satisfied that the operation would not save a dying patient's life, was he justified in performing it to please the patient? It was obviously impossible to lay down general rules for these cases.

During recent years the public and the medical profession had been faced with new problems arising partly out of the study of eugenics, partly out of new obstetrical and surgical discoveries and methods, and partly out of the aims and aspirations of modern men and women. These might be propounded by the question, "In what circumstances was it legally and technically justifiable to sterilize a man or woman?" Needless to say, no surgeon was bound to perform such an operation. There was a widely prevalent idea that, apart from illegal abortion, a surgeon and patient were entitled to agree upon any operation, and that if death resulted the consent of the patient relieved the surgeon from responsibility. That was erroneous. The validity of the consent depended upon the nature of the operation. A man might not maim himself or arrange with another person to maim him. To-day interest centred around vasectomy, which was, he was told, not uncommon in certain circles when married couples did not wish for offspring owing to the state of health of husband or wife, or for economic reasons, or because of the husband's family history—for instance, a strain of lunacy. In law such operation amounted to "maiming." The sterilization of women was a much more frequent operation, and the questions involved were of wide and growing importance. The law regarding operations on women was not so clear as that relating to men. He thought such an operation was illegal if performed upon a healthy woman, consent or no consent. The continuation of the race was a matter of public policy, and the sterilization of women to gratify a mere caprice would appear to be contrary to the public welfare and therefore illegal. The surgeon was faced with the difficult problem as to whether the operation was justifiable as a prophylactic measure to avoid a pregnancy or series of pregnancies, certain to be difficult or dangerous. It must be remembered that other methods of avoiding conception were available, including, of course, self-restraint.

Furthermore, what degree of threatened danger, or discomfort, justified the operation, and was it justifiable when the pathological condition was one that might not be permanent—for instance, a weak heart? What was the surgeon to do when appealed to by a workman's wife, who stated, in effect, that she had only three alternatives: (1) repeated pregnancies of a trying and dangerous character; (2) a sterilizing operation; (3) the loss of her husband? Most people would agree that there was nothing contrary to public policy in performing the operation in these circumstances. Then there was the still more difficult case of the woman who had had, say, five children in five years. The strain on her health had been severe, and the husband's financial position made it undesirable, in the interest of herself and her family, that she should have more children. She was anxious to be sterilized. Was the surgeon justified in performing the operation? Was the patient's general state of health and the prospect that it would become worse if she again became pregnant a pathological condition justifying sterilization? It would be interesting to know what medical evidence of justification, or otherwise, would be forthcoming in the event of a prosecution for manslaughter owing to a sterilizing operation. It was just as well that the subject should be ventilated. The public was entitled to know what was happening and what opinion the medical profession held. An interesting question arose as to whether the husband's consent was necessary if the wife herself consented. Supposing he would not consent, or, for some reason, his consent was not obtainable, what course was to be taken? A husband might well have a cause of action against his wife and the surgeon for depriving him of the possibility of offspring. It seemed clear that the husband would have no claim in respect of such an operation when rendered necessary by definite pathological conditions.

Then the sterilization of the mental defective was a favourite plan of eugenists. It was certainly alarming to learn that there were some 13,000 mental defectives in the United Kingdom, and that in twelve workhouses in one part of England twenty-three mentally defective women had had between them at least fifty-one children. Was sterilization legal in such cases? He considered the reply must be in the negative, unless the operation was for the benefit and welfare of the patient. The patient's consent would not justify the operation, even if he or she had sufficient mental capacity to give a valid consent. It was also clear, he thought, that the parent, or guardian, had no power to consent in such cases.

Lastly, the speaker touched on the legality of some of the so-called cosmetic, or beauty parlour, operations. The law seemed to be that such operations were not illegal, as they were not "maiming" operations. But here again the question of consent came in. Was a wife entitled to disfigure herself as she thought fit? If the beautifying operation turned out badly, could the husband sue his wife and the surgeon for damages? Was the wife's consent a bar? In short, could she do what she liked with her own face? There was this consolation for the surgeon—that if death resulted the action must be brought under the Fatal

Accidents Act, usually called Lord Campbell's Act, which provided that the representatives of the deceased had only the same right of action that the deceased had possessed. Thus, modern surgical methods and modern desires had raised new problems demanding the thoughtful attention of lawyers and surgeons, although happily in practice they rarely demanded solution.

DIAGNOSIS OF PULMONARY TUBERCULOSIS.

AT a recent meeting of the Royal Medico-Chirurgical Society of Glasgow, the President, Professor ARCHIBALD YOUNG, in the chair, Dr. IAN STRUTHERS STEWART of Nordrach-on-Dee spoke on "Some points in the diagnosis and prognosis of pulmonary tuberculosis."

Dr. Stewart referred briefly to the pathology in relation to the infection and subsequent spread of the disease. The infection at first attacks the lymphatic system; in the less acute cases the route may be through the tonsil to the cervical, mediastinal, bronchial glands, and thence by way of the peribronchial lymphatics of the larger bronchi to the lung, the subpleural lymphatics, and the visceral pleura. The inflammatory changes which take place in the bronchial wall as a result of the infection of the peribronchial lymphatics may be followed by caseation, ulceration into the lumen of the bronchus, and infection of the lung, or by blocking of the lumen with subsequent collapse of the lung area supplied—a condition which favours the further spread of the disease. Referring to the comparative frequency of the early signs and symptoms, Dr. Stewart gave the following percentages of frequency in 200 consecutive cases: cough 60 per cent., lassitude 48 per cent., pyrexia 42 per cent., haemoptysis 27.5 per cent., pleurisy 24.5 per cent., loss of weight 12 per cent., loss of voice 8 per cent., night sweating 7 per cent., dyspepsia 3.5 per cent., neurasthenia 1 per cent. Dividing these into toxaemic and localizing symptoms emphasized the fact that the toxaemic symptoms—namely, lassitude, pyrexia, loss of weight, night sweating, indigestion, and neurasthenia—might appear before any physical signs could be detected. The importance of accurate observation of the temperature was urged, and several illustrative charts were shown. The speaker went on to correlate the signs and symptoms with the pathological changes. When the infection was spreading through the lung it might be that the only signs present were loss of expansion—more obvious above the nipple or in the axilla—with some faintness of breath sounds on one side. Narrowing of Krönig's area of resonance over one or both apices might be found, or diminished tidal expansion at one or other base. Dullness was not usually demonstrable at this stage, but a few fine crepitations, audible only after coughing, under or above the clavicle or external to the nipple, or in the interscapular region, ought to be viewed with suspicion. As the swelling of the bronchial wall increased the breath sounds became harsh, and this harshness was more easily detected in inspiration. With the bronchopneumonia dullness appeared, often detected more easily high up in the axilla. Bronchovesicular breathing now appeared, becoming more bronchial as the consolidation increased. To detect the earliest evidence of pulmonary tubercle both percussion and auscultation must be used in conjunction with systematic inspection and palpation.

THE annual general meeting of the International Society of Medical Hydrology took place in Paris on April 20th and 21st, and was attended by the representatives of eight countries. Dr. Gustave Monod (France) was elected president for the year, in succession to Dr. Fortescue Fox (England). On the motion of Dr. VAN BREEMEN (Holland) a committee was appointed to report upon the incidence of chronic rheumatic diseases in Northern Europe and upon their treatment by physical methods. The following subjects were discussed in Professor Carnot's laboratory at the Faculté de Médecine: (1) Insulin treatment in relation to medicinal waters, introduced by Drs. CHABANIER (France), POULTON (England), and EPSTEIN (New York); (2) the spa treatment of rheumatism of traumatic origin, introduced by Drs. SCHMIDT (Czecho-Slovakia) and VINCENT COATES (England). Demonstrations and lectures were given by Dr. LEPAPE and Professor DESGREZ.

Reviews.

SIR WILLIAM OSLER'S LIFE.

THE eagerly expected *Life of Sir William Osler*,[1] by his distinguished pupil, Professor Harvey Cushing, now of the Peter Bent Brigham Hospital, Boston, Massachusetts, has appeared within four and a half years of the beloved physician's death, and has obviously been a labour of love carried out with affectionate care. The story of one whose admitted motto was "Write me down as one who loves his fellow men" has been written in fragments by many hands, and his "Counsels and Ideals" have been collected by Dr. C. N. B. Carnac, but here it is sympathetically told as a well balanced whole. Early in 1920 there was a widespread wish for such an account of the manifold activities of the late Regius Professor of Medicine at Oxford, and by Lady Osler's wish this task was undertaken by Professor Harvey Cushing, who has cheerfully and unsparingly devoted the intervening years to this pious trust. Helped by letters to and from many sources and by Sir William's private pocket-books, for he was an inveterate note-taker, the *Life* is skilfully allowed to tell itself, and the recorder stands modestly back in the shade, as it were, allowing very little light to fall on his association, close as it was; thus the reader is left to speculate about the identity of the "someone" who, when "the Chief" finally left Baltimore in May, 1905, "unscrewed and took away the unpretentious Dr. Osler doorplate." It is rather a striking coincidence that perhaps the most successful medical biography, that of Lord Lister by Sir Rickman Godlee, who has just passed beyond these voices, and now the life of a physician and scholar, are both the products of surgeons' skilled pens.

The book, which is pleasantly written, contains an immense amount of new information, especially about Osler's early days, when he was an athlete and a prefect at school, a keen scientific naturalist, and withal a very human boy; much of it will not only interest but surprise many who, like the reviewer, fancied that they knew a good deal about his doings. A striking feature is the number of unexpected changes and chances of his career that are brought out. He was born in 1849, the eighth of a family of nine, and was to have been named Walter Farquhar, but as his birthday was on July 12th the assembled Orangemen, when shown the new arrival in the arms of the Rev. F. L. Osler, of far-off Bond Head in Upper Canada, insisted that he should be dubbed "William the young Prince of Orange." Later William gave up the idea of caring for souls for the cure of bodies, and in 1872 was anxious to join the Indian Medical Service; soon afterwards he was inspired by Sir William Bowman's example to be an ophthalmic surgeon, hoping to be able to devote his spare time to science. But on Bowman's advice he first spent seventeen months in physiological work at University College under Burdon-Sanderson, whom by a curious turn of fortune's wheel he succeeded thirty-four years later in the Regius Chair of Medicine in Oxford, a possibility which, had it ever entered the heads of a professor of physiology and his pupil with ophthalmological ambitions, would have seemed highly improbable. While thus in London his kindly teacher, Dr. Palmer Howard, Dean of the Medical Faculty at McGill and now widely remembered from the dedication in Osler's textbook, wrote to him explaining the conditions which as the pupil said, "blighted his prospects" as an eye specialist in Montreal. A little later he was offered, perhaps as a consolation prize, a lectureship on botany, but this he had the strength of mind to refuse, and eventually he adopted Palmer Howard's earlier advice "to cultivate the whole field of medicine and surgery, paying special attention to physiology," by, as is well known, accepting the lectureship in Montreal upon "the Institutes of Medicine," as physiology was termed after the Edinburgh fashion. Another feature, not so unfamiliar as some of these incidents to his later-day friends—his

[1] *Life of Sir William Osler.* By Harvey Cushing. In two volumes. Oxford: The Clarendon Press. 1925. (Med. 8vo. Vol. I, pp. xiii + 685, 23 plates; Vol. II, pp. x + 788, 21 plates. 37s. 6d. net the 2 volumes.)

irrepressible fun, not to say practical joking—is described: for example, in his creation of Egerton Yorrick Davis, M.D., late U.S. Army Surgeon, of Fort Desolation in the Great Slave Lake District, and afterwards of Caughnawauga, a small hamlet on the St. Lawrence opposite Montreal, on whom he fathered fantastic stories, to whom he attributed even published letters, whose name he took when wishing to be unknown, and who indeed was to him as M'Conachie is to Sir James Barrie.

These two volumes are divided on a chronological and geographical basis into three periods, dealing respectively with his life in Canada (1849-1884), in the United States, first at Philadelphia as professor of clinical medicine in the University of Pennsylvania (1884-1889), then as physician-in-chief to the Johns Hopkins Hospital, Baltimore (1889-1905), and lastly at Oxford (1905-1919). The Johns Hopkins appointment was practically in the gift of J. S. Billings, who, an illuminating footnote allows the reader to guess, was converted, by the opinion of Professor W. H. Welch, from a leaning towards the late "Sir Lauder Brunton or a German professor who had been at the German Hospital in London," and is probably not named as he is alive. More than half of the first volume is devoted to the stirring sixteen years at the Johns Hopkins Hospital, where, to mention a later personal trait, he was beginning to be thoroughly steeped in medical history and "his infection with bibliomania was becoming chronic." The Osler most intimately known to his Johns Hopkins pupils was met at informal meetings on Saturday nights, when he would discuss the week's work and then give an appreciative talk, illustrated by early editions, on one or two of his favourite authors, perhaps Sydenham one week, Fuller or Milton the next, a practice he continued at Oxford. His unusual talent as an inspirer of youth was now for the first time appreciated to the full, and his success was far less due to his thorough familiarity with the subject-matter than to his knowledge of young men. What with teaching, practice, and his textbook, which first appeared in 1892 and was frequently revised with a remorseless hand, the days were very full and "he knew no idleness." But he had in a remarkable degree the power of economizing time; "no one could speak to Osler consecutively against his will," for he escaped by magic, but so graciously that those left could not feel any irritation. Though working at high pressure he wisely took holidays, often in England, and from 1894 was a frequent attendant at the Annual Meetings of the British Medical Association, and continued the custom after making his permanent home in this country; he became a member of the Central Council in July, 1905, and took a considerable part in the special clinical meeting in April, 1919, in London "under the Presidency of his brother Regius of Cambridge, for which reason Osler would have attended if for no other." He was also, as would be natural, chairman of the Oxford Division of the Association, and President of the Oxford and Reading Branch from 1919 until his death, but these are only two out of the numerous responsibilities he discharged. To the Baltimore period belongs the interesting photograph of Professors Howard A. Kelly, Osler, and W. S. Halsted, under one copy of which Osler characteristically wrote the appropriate legend: "The Fates: Howard A. Clotho, Wm. Lachesis, W. S. Atropos; the obstetrician holds the distaff; the physician spins the thread; the surgeon cuts it off."

The second volume is rather the larger of the two and has as its frontispiece an attractive and now sadly reminiscent photograph of "father and son," taken in June, 1905, by Dr. A. C. Klebs, an ardent bibliophile after Osler's heart. It deals with the years from 1905 until his untimely death on December 29th, 1919; the heading "The Oxford Period" is no doubt geographically correct, but "in England" or "in Great Britain" would in some respects be better, for, as the text amply shows, his influence rapidly became widespread, and he was much in London and elsewhere whenever there was any work being done or a good cause to be helped. That Professor Cushing should have devoted the whole of the second volume to this period proves the indefatigable nature of his piety, but it is undoubtedly difficult always to sound the right note, and there is a subject on which, after some hesitation on account of unavoidable personal bias, I feel a few words should be said. There is some very frank and superior criticism of the Royal College of Physicians of London, the expediency of which, as it is Professor Cushing's opinion, it would be wasting words to discuss, but the following extract deserves consideration, for it concerns some matters of fact:

> "It has been seen that Osler was made a Fellow in his Montreal days and subsequently gave the Goulstonian Lectures; and if the College did not receive him twenty years later with open arms, doubtless it was because enthusiasm over a newcomer would be foreign to its dignity. Moreover, no practising physician or surgeon can be transplanted to another community without provoking some misgivings on the part of those who dislike new ideas or who picture him as a possible rival. But Osler never heeded pinpricks. He had lived for five years in Philadelphia with Pepper and kept on the friendliest terms, and would not have recognized Jealousy had he met her, green eyes and all."

Now Osler arrived in Oxford in May, 1905, and was Harveian Orator, which Professor Harvey Cushing describes as "the blue-ribbon event of British Medicine," in 1906, Lumleian Lecturer in 1910, and in 1915 declined the invitation to deliver the FitzPatrick Lectures; there really does not appear to be any evidence of a cold reception in this; but the unpleasant touch in the quoted paragraph is the suggestion of jealousy and possible rivalry. This I never suspected or saw any evidence of, but, being uncertain of the personnel of the "old brigade" to whom reference is made, I have inquired from others, and the almost identical reply has been, in some surprise, "No one could be jealous of Osler." Surely Osler and many of his friends would have preferred silence on such a matter.

Optimistic in his wisdom, Osler often curbed the fancy and exaggeration of new ideas: thus he published a paper with the paradoxical title, "On the advantages of a trace of albumin and a few tube casts in the urine of certain men above 50 years of age" (1901), and again in 1912 wrote "On high blood pressure: its associations, advantages, and disadvantages." His *Aequanimitas*, containing the charming lay sermon on "Unity, Peace, and Concord," his farewell to the medical profession of America, should be added to the list of books for a medical student's bedside library, for we are, or should be, students all our days. The account of the Oxford period is no doubt long, but so full of incident that the interest is well maintained, and is a tribute to the skill with which the *Life* has been carried through. Though the professional work of Sir William is well recorded it is never obtruded, and the well drawn picture presents the man and his personal charm rather more prominently than the great physician and pioneer in medical education in its broadest aspects; and this is as his friends—and they are many—would have it.

Osler's activity in promoting public health measures is regarded by Professor Cushing as the greatest of his professional services; thus from his early days in Montreal he was much engaged in a crusade against enteric fever, combining this with campaigns against malaria and tuberculosis in Baltimore and in England with a whole-hearted energy in the fight against venereal disease. The diminution in the incidence of enteric fever in this country did not allow him to forget its importance in war, and in the autumn of 1914 he addressed the officers and men in the camps at Churn (BRITISH MEDICAL JOURNAL, 1914, ii, 569) on "Bacilli and bullets," as an educational warning that in previous wars infection had always been a greater destroyer of life than the enemy, and later in the war he pleaded in most moving words for the adoption of means to prevent venereal infection of young men on leave from the front. But it might appear to some that Osler was pre-eminent as an educator of medical men, that, in fact, he so raised the standard of teaching and practice that the striking change in the character of medicine in America during the last forty years was largely due to his influence and inspiration at the Johns Hopkins Hospital; for such a stimulus acts on the medical profession with ever-widening effect and, like a rolling snowball, increases progressively. His innumerable activities and their ever-changing facets in the Oxford period are described with arresting skill, and form a suitable memorial, admirably illustrated by successful photographs, of a wonderful personality, the like of whom we shall not look upon again.

HUMPHRY ROLLESTON.

THE MEDICAL ASPECTS OF CHEMICAL WARFARE.

In the future medical officers in every branch of the fighting services will need to be specially trained in the treatment of the effects of poisonous chemicals, and to meet this need in the American Army Lieut.-Colonel E. B. VEDDER has written a textbook, *The Medical Aspects of Chemical Warfare*.[2] The use of chemical poisons in modern warfare has created many problems in the solution of which the medical services are particularly interested. The making of these poisons will be left to the fertile minds of chemists, and for protection against their danger we hope we may rely also on the ingenuity of chemists; but medical officers will have to know how the different injuries inflicted by suffocating gases, corroding liquids, and venomous solids can best be treated, and it will be necessary always to obtain the opinion of the medical service whenever any protective appliance adds yet further burden to the back of the already heavily loaded infantryman. Apart from these immediate questions, the outlook which chemical warfare has opened up may call for a reconsideration of the organization of the medical services in time of war in order to cope with the heavy casualties which chemical poisons, especially new ones, are likely to cause.

Dr. Vedder has treated this important question in a thorough manner. The seventeen chapters of his book can be divided into three sections, dealing successively first with questions of physics, chemistry, and meteorology which govern the use of chemicals in warfare; secondly, with the different agents which may be employed, such as pulmonary irritants, vesicants, lacrymators, irritant smokes, and miscellaneous gases; thirdly, with individual and collective protection against chemical poisons and the treatment of the injuries. A chapter on the naval medical aspects of chemical warfare has been contributed by Lieutenant-Commander WALTON.

The book is based on the experience gained by armies in the late war, and the author acknowledges his indebtedness to Volume II of the *Official History of the War* (London, 1923), which includes a section on the medical aspects of gas warfare; from this British record he often quotes. French and German writings have been consulted also, but these are not quoted so frequently. The American Chemical Warfare School at Edgewood Arsenal became equipped as an important experimental station during the last year or so of the war, and the account of the experience gained there adds greatly to the usefulness of the book, especially because Dr. Vedder describes some new poisons, such as lewisite, which were tested there in 1918, but never actually used in warfare.

It would be reassuring to civilians and soldiers alike to believe that the catalogue of poisons this book describes so carefully included all the noxious vapours, gases, solids, and liquids with which we are likely to be threatened, but, unfortunately, reading the book does not set at rest that uneasy feeling that even worse are to come. At the close of the war rumour was insistent that both sides were about to launch new poisons against which no protection had been discovered. The secret of these is not revealed in this book, but even if they did not exist in 1918 it is quite likely that in the future our chemists, or those of the other side, will invent some such deadly agents. In the meantime, however, Dr. Vedder's book is sufficiently up to date and will provide the military or naval medical officer with plenty to think about.

The three hundred excellent illustrations add greatly to the value of this book.

THE MEDICAL ANNUAL, 1925.

THE *Medical Annual* for 1925[3] is the forty-third consecutive yearly issue of this popular book. It takes the same form as its immediate predecessors, and aims, like them, at giving a general review of the year's work in the treatment of disease. Some thirty contributors, British and American, have written for this volume, each on subjects which they have made their own.

No very dramatic advance in medical knowledge marked the period covered by the present review: it was a time of consolidation and minor excursions. Yet, although we have no obvious argument for claiming greater knowledge than dwellers in 1923, we look upon many questions from a slightly different point of view, considering some things more important, and some less, than before. So the cards are shuffled, and every year a different hand is dealt to the readers of the *Annual*, whose 500 pages represent the opinions of the day. We do not mean to suggest by this that there is little fresh in the new volume—that it is Sunday's dinner warmed up again for Monday; on the contrary, an amazing quantity of new scientific information is presented. We might have wished that elements of this had been sifted more critically, or at any rate accompanied by some comment, and we wonder how often, if a new edition were demanded in 1935, the editor's blue pencil would erase sentences which stand facing us now unchallenged.

The introduction by the editors serves as a finger-post to the fuller exposition of each subject in the body of the book, and readers wishing to explore the provinces where doctrines are changing are well guided to what is new and promising. Other readers, aiming direct at some special question, will have no difficulty in finding their way to what they want, because the book is excellently indexed, the more important articles being in heavy type. The forty-three plates, many of them coloured, deserve a special word of praise, and more modest line illustrations (149 of them) serve a useful purpose in explaining the text.

For the benefit of any who may not be acquainted with the general construction of this hardy annual we may add that purchasers are presented with a lot of other information in this book beyond that contained in the dictionary of practical medicine. Thus we are told about hydropathic establishments, institutions and homes for inebriates, postal regulations, principal British spas, and many other things. The *Medical Annual* for 1925 is an excellent investment, and the only regret which purchasers will experience will be that they did not order it before April 7th, when they might have had it for three shillings less.

NOTES ON BOOKS.

THE first edition of Dr. PERCY HALL'S book *Ultra-Violet Rays in the Treatment and Cure of Disease* (reviewed in this JOURNAL, February 28th, 1925, p. 413) has been quickly followed by a second.[4] Apart from a few minor alterations and the addition of a chapter on smokeless fuel, very little change has been made in the book, which remains a clear exposition of the manner of employment of natural and artificial light in the treatment of disease. If the medical profession needs more guidance in the use of these newly popular remedies, the general public stands in even greater need of more accurate knowledge concerning heliotherapy and ultra-violet ray treatment. As Dr. Hall points out in the preface to his second edition, the "violet ray" apparatus which hairdressers and others are pressing on the notice of their customers is likely to bring ultra-violet ray therapy into discredit. The "violet ray" apparatus is a miniature high-frequency machine and cannot be looked upon as a suitable appliance for the treatment of conditions of ill health and disease amenable only to ultra-violet radiation. A danger threatens the whole science of light therapy because of its rapid rise to the notice of the public. This new method of treatment should only be administered by those who have had a proper course of instruction in its application. There are signs that unqualified persons are making ready to exploit for their profit this promising line of treatment, which, as has been abundantly proved, can only be of value when accurately employed by skilled workers.

A work which has gone through ten editions since the beginning of the present century has evidently found a public. Dr. RAKHAL DAS GHOSH, a Calcutta physician, produced a *Treatise on Materia Medica and Therapeutics*, but died while the first edition was passing through the press. The second volume of the first edition and the next two editions were

[2] *The Medical Aspects of Chemical Warfare*. By E. B. Vedder. With a chapter on the Naval Aspects of Chemical Warfare by D. C. Walton. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. (Demy 8vo, pp. xvi + 327; 34 plates. 32s. 6d. net.)

[3] *The Medical Annual*. Forty-third year. Bristol: J. Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1925. (Demy 8vo, pp. xcvi + 608; 149 figures, 43 plates. 20s.)

[4] *Ultra-Violet Rays in the Treatment and Cure of Disease*. By Percy Hall, M.R.C.S.Eng., L.R.C.P.Lond. Introduction by Sir Henry Gauvain, M.A., M.D., M.C.Camb., and Leonard E. Hill, M.B.Lond., F.R.S. Second edition. London: W. Heinemann (Medical Books), Ltd. 1925. (Demy 8vo, pp. xx + 114; 9 plates. 7s. 6d. net.)

edited by Lieut.-Colonel C. P. Lukis, the fourth by Lieut.-Colonel J. T. Calvert, the fifth by Lieut.-Colonel B. H. Deare. These three officers successively held the appointment of Principal and Professor of Medicine in the Calcutta Medical College. The next four issues were edited conjointly by Deare and Dr. B. N. Ghosh, the son of the author. The new edition[5] is due to Dr. B. N. GHOSH alone. The whole text has been revised and the most recent works on pharmacology have been drawn on for the latest views on new drugs. Several drugs of minor importance, now little used, have been omitted; insulin appears for the first time and a couple of pages on vitamins have been added. The work is well adapted for a student's manual, as well as for handy reference by men in practice.

Volume xliv of the *Transactions of the Edinburgh Obstetrical Society*[6] for the session 1923–24 has been issued. Amongst the communications relating to obstetrics, which forms the first part of the volume, are papers by Dr. S. J. Cameron and Dr. Farquhar Murray on Caesarean section; observations on seventy years of country midwifery practice, by Dr. C. E. Douglas; and a paper on the induction of labour by quinine and pituitrin, by Dr. F. J. Browne, who contributes also an article on stillbirth and neo-natal death, in continuation of his previous publications. The communications relating to gynaecology contain contributions from Drs. Haig Ferguson, R. W. Johnstone, and James Young. The eloquent valedictory address by Dr. Lamond Lackie on recent advances in obstetrics and gynaecology occupies the first twenty-five pages of the volume.

We have recently received the third edition of the second volume of Dr. R. C. CABOT'S work on *Differential Diagnosis*[7]; the first edition of it was noticed some ten years ago (JOURNAL, July 24th, 1915, p. 141). The volume consists of nineteen chapters devoted respectively to the consideration of the following heterogeneous subjects: abdominal and other tumours, vertigo, diarrhoea, dyspepsia, haematemesis, glands, melaena, swelling of the face, haemoptysis, oedema of the legs, frequent micturition and polyuria, fainting, hoarseness, pallor, swelling of the arm, delirium, palpitation and arrhythmia, tremor, and ascites and abdominal enlargement. Each chapter commences with general considerations, which are followed by a detailed description of individual cases, of which the volume contains 317. As was pointed out in our notice of the first edition, some doubt may be felt as to the utility of such a method, as in comparatively few cases was the opportunity of a necropsy or satisfactory biopsy afforded, so that the diagnosis of the great majority was open to question.

[5] *A Treatise on Materia Medica and Therapeutics, including Pharmacy, Dispensing, Pharmacology, and Administration of Drugs.* By the late Rakhal Das Ghosh. Tenth edition, by Birendra Nath Ghosh, F.R.F.P. and S.Glasg. Calcutta: Hilton and Co.; London: H. K. Lewis and Co., Ltd. 1925. (Cr. 8vo, pp. xii + 718. 10s. 6d. net.)

[6] *Transactions of the Edinburgh Obstetrical Society.* Session 1923-24. Vol. xliv. Edinburgh: Oliver and Boyd. 1924. (Med. 8vo, pp. xix + 231; illustrated.)

[7] *Differential Diagnosis.* Vol. II. By R. C. Cabot, M.D. Third edition. Philadelphia and London: W. B. Saunders Company. 1924. (Roy. 8vo, pp. 709; 254 figures. 42s. net.)

ROYAL SOCIETY OF MEDICINE.

THE RETIREMENT OF SIR JOHN MACALISTER.

EVERY Fellow of the Royal Society of Medicine will have learnt with keen regret from the announcement we made last week that ill health has compelled Sir John MacAlister to resign the office of secretary, which he has so long, so honourably, and so devotedly filled. At the meeting of the Council of the Society last week the following resolutions were proposed from the chair:

1. That the Council of the Royal Society of Medicine desires to express its profound regret that ill health has compelled Sir John MacAlister to resign his office of secretary, which he has held since the year 1887. In accepting his resignation the members fully realize that the Society as at present constituted owes its creation to his organizing powers; that its growth and success are chiefly due to his zealous devotion to his duties; and that its welfare and reputation have been his life's work.

2. That the Council unanimously offers its most sincere thanks to Sir John MacAlister for his thirty-eight years of ungrudging and loyal service to the Society.

3. That the Council sends its affectionate good wishes for Sir John MacAlister's restoration to health and vigour.

4. That the Council has great pleasure in inviting the Society to elect Sir John MacAlister as an Honorary Fellow of the Society.

In submitting these the President, Sir STCLAIR THOMSON, reminded the Council that their permanent secretary had been overcome with illness and absent from the Society's house since December 16th. On January 20th he had been granted three months' leave of absence, and during his absence a great deal of the administrative work had been willingly and admirably carried on by Mr. W. Girling Ball, one of the honorary secretaries. The President said he felt sure that the letter of resignation must have caused the writer a sorrowful pang, for Sir John had devoted his life to the Society, and all his work, his joy, and his satisfaction of life had concentrated in its service. The profession had been fortunate in finding in MacAlister the one man able to effect an amalgamation which, though often attempted, had baffled others for a hundred years. He recalled the three great and successful achievements of Sir John's life-work. The first was the move of the old Medico-Chirurgical Society from Berners Street to a building in Hanover Square, large enough to house it, to lodge its increasing library, and to supply meeting rooms to many kindred societies. The second was the federation of these eighteen societies into the Royal Society of Medicine, the largest society of its kind in the kingdom and with the most complete medical library in the empire. The third great feat was the erection of the Society's handsome house in Wimpole Street, the move there, and the consolidation of its success in numbers, meetings, published *Proceedings*, wealth, and general prosperity. He felt sure that no formal resolution could be too generous in making public acknowledgement of the indebtedness and affection the Society felt towards Sir John MacAlister and the deep regret all experienced on realizing that his health prevented him from continuing his duties.

Two previous Presidents of the Society, Sir HUMPHRY ROLLESTON and Sir WILLIAM HALE-WHITE, took occasion, in supporting the resolutions, to refer to MacAlister's devoted work during their years of office. Sir Humphry recalled the small beginnings he remembered in Berners Street, and the constant, loyal, and single-hearted service of their secretary. Sir William referred to the personal touch, the friendliness, the accessibility of MacAlister, and his eagerness to help anyone—whether a Fellow of the Society or not—and in any way, even if unconnected with the Society's work.

The resolutions and the terms in which they were commended by the President of the Royal Society of Medicine and two of his predecessors will be warmly and heartily approved by all who have come into contact with Sir John MacAlister, whether officially or socially, and by none with more conviction than those who remember his achievement in bringing about the amalgamation in 1907 of the eighteen societies which then existed in London. His was not the first attempt to achieve the desired result; the fact that other attempts had failed, including one under very favourable auspices only a few years before, is a proof of the difficulty of the task and of the high qualities MacAlister brought to bear on its final solution. MacAlister was devoted to the interests of the Society which he had done so much to bring into existence, to consolidate, and to render one of the great medical organizations in this country. He was also ever ready to assist in any enterprise which he believed was for the good of the profession, and we may especially mention his large share in establishing the Fellowship of Medicine and organizing at Christmas, 1918, the post-graduate courses in London, which, during the first half of the following year, met the needs of a large number of medical officers then being demobilized, including those of the Australian, New Zealand, and Canadian armies. It is only consistent with his high sense of duty that he should have resigned his office solely on the ground that he felt that he has not now the vigour necessary for the adequate performance of its many duties. His resignation does not take effect until the end of June. We hope that until then, and long afterwards, he will continue to come among his many friends in the profession on every social occasion.

British Medical Journal.

SATURDAY, MAY 2ND, 1925.

CHEMICAL WARFARE.

THE use of poisonous gases and other chemicals in warfare, though denounced by the Washington conference on the limitation of armaments, remains a controversial issue and a disquieting theme for speculation. Many powerful nations were not represented at that conference, and have not signified their intention with regard to poisonous chemicals; but even if all were to join in the chorus of disapproval it would be wise to remember that gentlemanly rules for warfare are quickly set aside in a life-and-death struggle. At the present moment probably every well armed "civilized" nation is asking its chemists—or watching its neighbours—to find a poisonous gas or liquid which would put enemy forces quickly out of action, and no doubt also scientists are being asked by their respective Governments how soldiers and civilians can best be protected against deadly or crippling chemicals to which they may suddenly be exposed. In times of peace the civilian population, of this country at least, is not much interested in the technicalities of warfare, and leaves such questions to experts; but many people who would leave the choice of their shrapnel to soldiers or their warships to sailors feel that they would like to be made acquainted with what is being done about poisonous gases—partly, perhaps, because they know that in time of war everyone, civilian and soldier alike, will have a personal interest in the question. It is a good thing, therefore, that the subject of chemical warfare should be studied in a scientific way and expounded in a reliable textbook which anybody may read—such a book, for instance, as that by Lieut.-Colonel Vedder, reviewed at page 845.

To form a sound judgement on the question of the use of gas in warfare we must realize that it is certain to be employed. It is probably on this account—because it is believed that there are nations which will not hesitate to use poisonous gases and the like against civilian populations, including their children and women—that opinion has revolted against the method. There are those who think that wars may in this way be brought to an end, and we can only hope that they may be right. However this may be, it will not be wise to denounce chemical warfare as a nasty modern innovation into the respectable and time-honoured custom of killing our fellow men with bayonet and shot. This opinion, its nakedness decently cloaked, is sometimes upheld by the professional soldier, but it has to be admitted that all new weapons, including gunpowder, shrapnel, and machine guns, when first introduced were denounced as infringements of the rules of the game, yet their employment is now considered to be perfectly compatible with "sportsmanship." There remains, however, one objection to chemical warfare which is deep-rooted in the minds of many people, and about which medical men ought to give some guidance—namely, that chemical warfare is more barbarous, more cruel, more merciless than other weapons of warfare. What truth is there in this?

Mr. J. B. S. Haldane, reader in biochemistry at Cambridge University, vigorously defends chemical warfare in an entertaining little essay called *Callinicus*; it forms one of a series, the first of which—*Daedalus*, by the same author—was an amusing forecast of the future of science, which probably many of our readers have enjoyed. The title of the present essay commemorates the exploit of a Syrian architect, Callinicus, who in the seventh century fled from Heliopolis to Constantinople with the secret of the "Greek fire," a chemical substance which, when thrown out from siphons, set the ships of the Saracens on fire and so assured their defeat. The title of this essay, as also the historical chapter in Dr. Vedder's book on chemical warfare, serves to remind us that the use of noxious chemicals in war has at least the sanction of a precedent that dates from before April 22nd, 1915.

Mr. Haldane states that the twenty-five poisonous chemical weapons employed in the late war can be divided into four classes according to their effect on men. First come gases and vapours which are poisonous when inhaled but have no effect on the skin, and affect the eyes or nose only when present in concentrations which are poisonous to the lungs. This group, which includes chlorine and phosgene, can all be kept out by respirators; they are of military value only against unprotected troops, and, he believes, "almost as obsolete as muzzle-loading cannon." The members of the second group only irritate the eyes, and there is no evidence that anyone was killed or permanently blinded by these substances. They cause men to weep profusely, but can be kept out by respirators or even goggles. A third group of poisonous smokes, mostly arsenic compounds, were very little developed during the war, but would probably have been used on an extensive scale in 1919. The fourth group, of blistering liquids, includes the very powerful irritant "mustard gas," which produced more casualties to the British than all other chemical weapons put together. Mustard gas caused 150,000 casualties in the British Army alone; under 4,000 (or 1 in 40) died, while about 700 (or 1 in every 200) were rendered permanently unfit. The signatory powers of the Washington conference have agreed not to use this substance against one another, but in the heat of war they may forget. It is therefore some consolation to be told that it would appear to be one of the least lethal of available methods of putting an enemy out of action.

Mr. Haldane's defence of chemical warfare, and also Dr. Vedder's more substantial book, both support the view that in the late war poisonous chemicals were less cruel weapons of warfare than bombs, shells, and bullets; but it is at least conceivable that in a future war chemists may provide us (or our enemies) with some much more powerful poison. Such a compound is most likely to be found among the poisonous smokes; in fact, there is a substance called lewisite—so named after Professor Lewis, who first isolated and described it in 1918—which, because of its highly irritating and poisonous properties, would certainly have been used by the British and Americans had the war gone on a little longer. In small amount these smokes make a man sneeze; in larger quantities they cause agonizing headache and uncontrollable distress. Mr. Haldane says: "Some soldiers poisoned by these substances had to be prevented from committing suicide; others temporarily went raving mad and tried to burrow into the ground to escape from imaginary pursuers." Yet in spite of this acute misery the large majority had recovered within forty-eight hours, and practically none became permanent invalids. Used in the form of smoke, these substances will penetrate any of the respirators used in the late war, though the British box respirator offers a considerable degree of protection.

There is a good description of lewisite, and also of some other chemical poisons which the Allies were preparing, in Dr. Vedder's volume, which is intended to serve as a textbook for medical officers in the services; but *Callinicus*, which can be read from cover to cover in about fifty minutes, is of universal interest.

OYSTERS AND MAYORAL BANQUETS.

IN the year 1902 a mayoral banquet at Winchester resulted in serious illness among those who took part in it. Out of 134 guests 62 were subsequently taken ill; 9 of these developed typhoid fever, and 4 died. The cause of the illnesses was, on investigation, found to be the consumption of oysters. In the same year Southampton had a similar unfortunate experience. There also a mayoral banquet took place, and of 132 guests 55 fell ill, 11 of them with typhoid fever. One of the 11 died. Oysters were again found to be the vehicle of infection.

These facts are recalled by Dr. Mearns Fraser in a report of an outbreak of similar illness among the guests at a mayoral banquet in Portsmouth. The total number of persons partaking of the meal was 135, and 83 of them suffered some illness within a few days. The symptoms were those of acute gastro-enteritis, and three of the patients developed definite paratyphoid fever of severe type, though no death occurred. Once more, as shown in Dr. Mearns Fraser's clear and concise report, oysters were proved, by a process of exclusion, to have been responsible for the outbreak. Adopting the method of investigation used by the late Dr. Timbrell Bulstrode of the Local Government Board, as recorded in his classical reports on the subject of oyster contamination, Dr. Fraser communicated with all those who had partaken of the viands provided, and obtained from each a statement showing every item he had consumed of the seventeen contained in the menu. Of the 83 who became ill 82 had had oysters and 81 had had soup; these were the only articles under real suspicion, pheasant and salad, coffee, and lamb cutlets, which came next in order of frequency, being practically out of the question. It may be assumed that the salad was exculpated, though "greenstuff" is not unknown as subject to contamination. Inquiry regarding the soup showed that the stock had been repeatedly boiled, and that the soup itself had been brought to the boiling point shortly before the dinner was served.

The facts regarding the three persons who developed paratyphoid fever are interesting. The date of the banquet was November 10th; two days later one of the three had an attack of vomiting, and continued to feel somewhat indisposed until November 27th (seventeen days after the dinner). When he was medically examined he had a temperature of 104° F., and was found to be suffering from paratyphoid B. Another of the three felt no ill effects until November 28th, when his temperature was found to be 105° F., and a blood test later showed paratyphoid B bacilli. The illness of the third began four days after the dinner and continued until November 26th, when he took to bed and was found to be suffering from paratyphoid B. All three thus developed the definite symptoms of specific infection about the same time, sixteen to eighteen days after the dinner. Questions suggest themselves as to the relation between the general bacterial contamination of the oysters and the pathogenic bacillus, but these cannot be entered on here.

Dr. Fraser ascertained that 412 oysters had been supplied for the occasion. Incidentally, excessive indulgence in them could not be held responsible, for the number served to each guest was only three; and this was the case at each of the two banquets in 1902. Indeed, at Winchester a guest who swallowed only one oyster died from typhoid. The oysters for the Portsmouth dinner had been dredged from beds at two places in the Solent—one near the Warner lightship, and the other the Boyne Bank, about half a mile off Southsea Castle. None of those actually provided for the occasion were, of course, available for examination, but Dr. Fraser had dredgings made at both places, and at his request the Fishmongers' Company had the oysters so obtained examined by Professor Eyre of Guy's Hospital, bacteriologist to the Company. Of ten oysters from the Warner Bank, one contained the *Bacillus coli*, the other nine were clean; of the same number from the Boyne Bank no fewer than six showed the *Bacillus coli*, and one the *Bacillus enteritidis sporogenes*. Such oysters are, according to present standards, to be regarded as unfit for consumption, and would not be allowed on the London markets, but the one-in-ten contamination from the Warner Bank dredging would not exclude them from sale in London.

Dr. Mearns Fraser points out that under the law as it stands at present there is no obstacle to the sale in Portsmouth of oysters dredged in its neighbourhood, with the single exception of those from Langston Harbour, from which, under regulations made in 1918, oysters must not be sold unless they have been relaid at certain other layings; the enforcement of this regulation must manifestly be difficult. He holds that protection, indeed, lies with the individual, the only safety of the public being to see that they obtain oysters from firms guaranteeing that their layings are under inspection and approved by a competent authority. It appears that for retail shops perfectly safe sources are available under action taken by the Fishmongers' Company, which keeps most of the principal layings in the country under constant observation, so that they are maintained in a state of purity. As Dr. Fraser urges, oyster beds cannot be defended merely because they may for long periods be used without any proof of having caused disease. Sewage will vary from time to time in concentration and in bacterial content. Tidal influences also are at work. The greatly diminished prevalence of typhoid fever throughout the country manifestly lessens risks of infection of oysters by specifically polluted sewage, but the Portsmouth banquet demonstrates that the possibility remains, and from the preventive side the position should be once more reviewed. It may be safely assumed that the Ministry of Health will give due attention to Dr. Fraser's report, and to the question which it raises as to the value of the regulations commented on therein. The situation is at present frankly unsatisfactory.

THE BUDGET.

IF the framing of the Budget had fallen this year to the lot of a Minister with a reputation for caution to maintain, it would probably have evoked less interest than is usually the case. By this time the average taxpayer entertains little hope of receiving substantial relief through reparation payments or by the repayment of loans made to other countries. He realizes that there is no easy or immediate escape from the

burden of high taxation, and that its deadening weight will only be reduced gradually, and, in the main, by his own efforts. Nevertheless, Mr. Churchill's well founded reputation for energy and freshness of mind created a general expectation, or at least a hope, that he might achieve some ingenious and drastic handling of the problem which would provide real and immediate relief without offence to the canons of sound finance. It does not often happen that widely read organs of the daily press are found to be discussing the possibilities of a shilling reduction in the rate of income tax while more sober weekly journals—such as the *Economist*—are pointing out that, on the known facts of the case, a reduction of sixpence would hardly seem feasible without increased taxation in some other direction. An examination of Mr. Churchill's speech suggests that once again the wish has been father to the thought.

A striking feature of the figures for the past fiscal year is the narrow margin between income and expenditure. The day of swollen surpluses has passed, and there is good ground for regarding their passing without regret. It is true that past surpluses have played a large part in the unprecedented reduction of the National Debt, but to a large extent these surpluses were obtained in years during which assets of various kinds, which had been acquired with borrowed money for war purposes, were being realized and the proceeds dealt with as public revenue. Now that the source of such receipts has dried up taxpayers have a legitimate ground of complaint if, after providing for a large repayment of debt—the amount will be £50,000,000 in the present year—they found that the taxation they had been called upon to bear had provided for a sum substantially greater than, after due consideration, was considered appropriate. Especially is this the case in view of the fact that the annual charge in respect of war pensions shows, and presumably will continue to show, a steady decrease.

In commenting on the accuracy of his predecessor's forecast of a surplus of £4,000,000 for the past year, Mr. Churchill paid him a handsome compliment on his financial administration, with the qualification that the figures for individual items showed that "Mr. Snowden had been fortunate as well as far-sighted." Even allowing for the steadying effect of the three years' average system of the income-tax assessments, the Exchequer receipts are affected by trade conditions to an extent that is realized by comparatively few people. Consequently one of the most important duties of a Chancellor is his preliminary survey to ascertain the trend of trade generally, and at the present time, when signs of recovery from depression are eagerly sought for, Mr. Churchill's pronouncement on this question was awaited with peculiar interest. His opinion was plainly given, and is not particularly encouraging. "I do not feel justified," he said, "in budgeting for any substantial expansion of trade." Nothing is gained by a refusal to face facts, and though this sober statement may damp the ardour of those who wish to "talk up" a trade revival, its modified optimism should prove helpful.

With no trade boom on the horizon to increase the receipts, with departmental estimates of expenditure still increasing, and an additional five millions to provide for debt redemption—an increase necessary to carry out the programme outlined by the present Prime Minister when Chancellor—any drastic reduction in taxation becomes impossible without recourse to some scheme, such as the funding of war pensions, which would postpone expenditure to future years. On the contrary, Mr. Churchill is taking care to maintain the income of the Exchequer by new or increased taxation in various directions. The death duty rates are to be increased on estates of £12,500 and upwards, and other duties are imposed which seem to have a twofold basis—they affect luxuries and are aimed at stimulating home industries. Into this category fall the duties on silk, on hops, and the group of duties—on motor cars, musical instruments, watches, etc.—commonly known as the McKenna duties. Beyond this, the receipt of £9,500,000 is anticipated from reparations, but the Budget does not take into account the prospect of any repayment by France of money lent to her. New taxation does not fructify quickly, and the receipts anticipated from these changes are, in round figures, ten millions in the present year and twenty millions next year. Taking into account Mr. Churchill's statement that a fresh attempt will be made by the Treasury to cut down expenditure, it is clear that he is looking to the future for that substantial reduction in taxation which, in some quarters, was hoped for this year. His proposals, however, enable him to show a surplus—on the basis that the present taxation remains and is augmented by the suggested changes—of £37,000,000, and on that basis he has material on which to draw for some relief to the hard-pressed taxpayer. Of this amount the additional receipts from estate duties are returned to the same class of the community in the form of a reduction in the rates of supertax applicable more especially to total incomes in the lower categories liable to that tax. This transfer of taxation from income to capital, and from the less wealthy to the very wealthy, has already aroused some criticism, but the basic idea seems sound—that is, to avoid excessive pressure on the brain worker, whose income ceases after his ability to perform difficult tasks has been lost.

The income-tax proposals are particularly interesting. The increase in the allowance for earned incomes will afford substantial relief to taxpayers with earned incomes below the supertax limit, and particularly to those under £1,000. By this alteration the Chancellor reverts to the larger relief for earned incomes which was reduced when the method of computing it was changed by the Finance Act of 1920. A small but welcome addition is made to put the income from savings of old people with total incomes not exceeding £500 per annum in a similar position, even though no portion of their income is then being earned. Lastly, the anticipated reduction of sixpence in the standard rate is made, so that income from investments may benefit, though not so substantially as earned income.

Budget statements, though never devoid of interest, are usually confined to purely fiscal questions—estimates of future or statements of past receipt and expenditure. This year the Chancellor discussed two other related topics—the question of the "gold standard" and the launching of a comprehensive scheme of contributory insurance. Of the former it must suffice here to say that the prohibition of the export of gold will be withdrawn subject to supervision by the Bank of England, that precautionary measures have been taken to prevent difficulties being met with in the repayments of loan to the United States, and that a link will be maintained between the price of gold and the purchasing power of the currency notes, though the issue of gold coinage is not proposed. It would be premature to enter into a discussion of the new insurance scheme; comment thereon must await an examination of the details of the proposal. On the face of it the scheme seems to constitute a long step forward on lines likely to commend themselves to the

country generally. Assuming that all the political parties address themselves to the task of developing the ideas put forward into a practical and businesslike scheme, this Budget may prove a landmark in the progress toward the emancipation of the poorer classes of the community from the anxieties at present attendant upon inability to provide for their own support in old age, or that of their dependants in the case of premature death.

Mr. Churchill has justified his reputation for ability to handle large problems with imagination and sound knowledge. He is providing for a great extension of one of our most important social schemes, and has, we believe, applied a not inconsiderable instalment of income-tax relief to the class of taxpayer most deserving of sympathy—the man who, without resources in the form of invested capital, is struggling to earn an income sufficient to provide for his dependants and himself, and at the same time to make adequate provision for their support after his retirement or death. Certainly most of our readers appear to have cause to thank him for his efforts.

THE SURGEON'S RESPONSIBILITY.

DISCUSSIONS such as that evoked by Lord Riddell's paper upon "The legal responsibility of the surgeon" before the Medico-Legal Society (of which an account appears at page 842) serve an important educative purpose to the medical profession. If only to protect themselves from such pitfalls as beset the path of the medical man in pursuing his life work, members of the medical profession would do well to instruct themselves fully as to their legal responsibilities, both civil and criminal. For it may be that in their very real anxiety to keep within the law they may refuse to relieve a case which it would be both humane and lawful for them to relieve. Professor Louise McIlroy cited such a case in the course of the discussion. It was one of a working woman with an ovarian tumour which caused her great pain, but her husband, in consequence of a quarrel they had had, would not consent to the removal of the tumour, and so the woman left the hospital unrelieved. Professor McIlroy did not think the problem whether such an operation should be performed in such circumstances would ever be cleared up; but Lord Riddell, in his paper, had already expressed the legal view that, while the husband might well have a cause of action against his wife and the surgeon for depriving him of the possibility of offspring, it seemed clear that the husband would have no claim in respect of such an operation when rendered necessary by definite pathological conditions. In these days, added Lord Riddell, a wife could not be condemned to submit to illness, and perhaps to risk of life, because her husband declined to consent to a surgical operation. Lord Justice Atkin, the learned president of the society, said that he knew of no rule of law which compelled the surgeon who was called in by a wife to obtain the consent of the husband to the treatment which he should adopt. True, if the surgeon was looking to the husband to pay his fee he should have the consent of the husband, being the person who had promised to pay such fee; but apart from that, and any question of wrong or tort (by which Sir Richard Atkin meant provided the doctor acted *bona fide* and with due skill and care), he imagined that the consent of the woman was sufficient to justify the surgeon in exercising his care and skill upon her. Upon the high authority of Lord Justice Atkin, therefore, a case such as that quoted by Professor McIlroy ought to have been relieved if the wife were a consenting party—as it appears she was—for it obviously was not a case where the husband was being looked to for payment of fees.

THE SIGNIFICANCE OF PAPILLOEDEMA.

IN September, 1924, a symposium on papilloedema was held at the meeting in Montreal of the American Academy of Ophthalmology and Oto-Laryngology. The March issue of the *Archives of Ophthalmology* contains three of the papers then read, setting forth the present views on the significance of this condition held by an ophthalmologist, an oto-laryngologist, and a neurologist. J. Bordley, jun., points out that in the large majority of cases papilloedema is not a local ocular infective lesion, but a mechanical effect of the increased intracranial pressure, and therefore the ophthalmologist should obtain expert advice from specialists in other fields. No time should be lost in doing this, because the longer the morbid process continues the greater in extent will be the final loss of vision. Bordley believes that there is considerable danger of overestimating the frequency of sinus disease as the cause of papilloedema, and that the result is disastrous to the patient's vision. Foci of infection remote from the brain and optic nerve are rarely found to be the cause of choked disc. G. Horrax remarks that statistics indicate that in 80 to 90 per cent. of cases of papilloedema the increased pressure is due to cerebral tumour. He describes five cases in which delay in suspecting a cerebral lesion led to permanent loss of vision in spite of operative treatment that was otherwise successful. L. E. White, speaking from the oto-laryngological standpoint, insists that a very careful study of the neurological side of the case should precede any intranasal operation for the possible presence of accessory sinus disease. He draws attention in particular to unilateral inflammation of the optic nerve directly traceable to an infected nasal sinus. This condition of papillitis is clinically distinguishable from true papilloedema in that it is unilateral, and vision is lost from the first, in contradistinction to papilloedema, where the vision is affected late and the swelling of the disc does not usually become so extreme. Although vision in papilloedema is often not affected until some time after the onset, it is not desirable to allow the disease to continue, since secondary atrophy of the nerve may result from pathological changes which increase proportionately to the length of time and severity of the papilloedema. White concludes that the rhinologist should restrict his surgical treatment to these acute unilateral cases, and so avoid the risk of opening an accessory sinus unnecessarily. These sinuses, he is convinced, should be left alone unless they present evidence of infection.

FISH AND MOSQUITO CONTROL.

MALARIA is one of the most widespread and serious diseases in the world, and for that reason has been selected by the International Health Board of the Rockefeller Foundation for concerted action. There are several main lines of attack, and among them one of the most important is an attack on the mosquito. This has been attempted on a large scale by the use of oil and poisons in the breeding sites, by drainage, and so on. Another method, which has frequently been recommended as a supplementary measure, is the use of larviferous fish. So far it has not been attended by much success, but the International Health Board has recently published a report on it.[1] The principle of biological control, as this method may be called, has been used frequently, and often successfully, in agriculture. Any interference with the balance of nature, however, has to be attempted cautiously and only by experts—rabbits in Australia and sparrows in the United States are two examples of man's ill advised handiwork. There is evidence, however, that the use of fish, if carefully supervised, is effective in mosquito eradication. In the report, which is copiously illustrated, it is pointed out that the problem is complex. The species of fish to be chosen depends on the

[1] *The Use of Fish for Mosquito Control.* Pp. 120. 1924

locality and the habits of the particular larva to be attacked. Thus, for example, the larvae of the malaria mosquito are "top-feeders," and so top-feeding fish are necessary. On the other hand, the larvae of the yellow fever mosquito are mainly "bottom-feeders," and so minnows of different feeding habits must be used. The type of breeding place and many other factors vary, and must be separately considered. The report is in the main concerned with a consideration of the fish used in the various parts of the world. It appears that, where fish have been scientifically used, the malarial index has been reduced, that they have been a complete success against yellow fever, and that "within limits, perhaps not so narrow as may be supposed, this method is ready to take its place as a recognized ancillary means of both yellow fever and malaria mosquito control." The usefulness of the report is greatly increased by a comprehensive bibliography.

PLAGUE IN SOUTH AFRICA.

FOR some years past the existence of plague in South Africa has been a cause of anxiety there. The report for the year ended June 30th, 1924, by Dr. J. A. Mitchell, Secretary for Public Health and Chief Health Officer of the Union of South Africa, shows that the anxiety is well founded. During the year there were 167 outbreaks in the Union, causing 372 cases, with 235 deaths. The great majority—321 cases and 208 deaths—were in the coloured and native population; the number of whites attacked was 51, with 27 deaths. About 85 per cent. of the cases were bubonic, 12 per cent. pneumonic, and the remainder septicaemic. Kissing is believed to have been the mode of infection of most of the pneumonic cases. Notwithstanding much publicity, all cases were not promptly reported. This applied to Europeans as well as natives; consequently there was delay in diagnosis and precautionary measures. The main cause for anxiety, however, is the prevalence of the disease among rodents. Plague was introduced to Capetown and Port Elizabeth in 1901 by infected rats from ships bringing forage from South American ports, where the disease existed at the time. It was introduced to Durban in 1902, and extended to Johannesburg in 1904. Epizoötics occurred amongst domestic rodents and concurrent epidemics in man, fleas being, as usual, the intermediary. Wild rodents were found infected in the outskirts of several towns. Since 1912 many outbreaks have been discovered, and in 1923 a survey of wild rodents in the Orange Free State and Cape Midlands revealed plague infection over a wide area. Last winter the epizoötic spread extensively in the territory surrounding Bloemfontein, and the area of the Union now known to have enzoötic plague infection is about 50,000 square miles. Dr. Mitchell states that in the Kroonstad district and adjoining parts, owing to the recent epizoötic, it is estimated that 80 to 90 per cent. of the total veld rodents, and from 30 to 40 per cent. of the associated small carnivora (mongoose and suricates), died of plague. Plague bacilli have not often been found in the carnivores, but they eat enormous numbers of rodents, and may have died from poisoning by toxins; also they may be carriers of fleas from the dead rodents. In some localities in the height of the epizoötic dead rodents could be collected by the barrowful. The difficulties under such conditions in the way of controlling the disease are enormous. The South African Biological Society has made strong representations to the four provinces of the Union that the natural enemies of rodents, such as owls and hawks and wild cats, should be protected. The balance of nature has been seriously disturbed by their destruction in many localities, where rodents are a pest apart from plague. Some farmers, indeed, by preserving bush, planting trees, and stopping of veld burning and shooting, have greatly reduced the evil. One enterprising farmer turned loose a consignment of domestic cats, and by limiting their regular diet of milk led them to hunt for most of their food, and has largely cleared his farm of rodents. Inquiries made early in the epizoötic revealed the infestation by rodents dying of plague of a large number of grain stacks on farms and at railway stations, intended for transport or export. Regulations were issued prohibiting such conveyance, and measures were taken to make the regulations effective, with such success that no instance of failure is known, notwithstanding the inconvenience and loss involved in the prohibition. An active campaign was instituted of search for and destruction of rodents, both in railway trucks and in localities. But Dr. Mitchell goes on to say that the problem has hitherto been found almost insoluble in the large tracts of country in South Africa. The gassing of veld rodents in their burrows and in stacks of grain by carbon disulphide is costly and tedious, though hydrocyanic acid is more promising. The dynamiting of rodent burrows is also proving useful. Poisoned baits have been devised with some success. Strips of country are being selected for special effort in the formation of "plague fire belts" designed to limit epizoötic extension. But further investigations—zoological, entomological, and bacteriological—are urgently necessary, and proposals to that effect have been submitted to the Government. In a valuable appendix Dr. Mitchell submits a detailed scheme of investigation under each of these three headings, and his proposals, it may surely be assumed, will receive the earnest and sympathetic attention of the South African Government.

BILLROTH.

IN the last third of the nineteenth century probably no surgeon was held in higher esteem than Billroth. His famous book written in Vienna became known by means of translations all over the English-speaking countries. Senior students were advised to read it, and most young surgeons made themselves familiar with his doctrines. Before going to Vienna Billroth was seven years in Zürich. We now have from the pen of Dr. Arnold Huber a book on his work there.[1] It is written partly to place on record the debt that the Zürich school owes to Billroth, without any attempt to trace his scientific development as one of the pioneers of surgery; but it is mainly designed to show what manner of man he was. The sentiment running through the whole book is disclosed in Dr. Huber's opening sentence: "Billroth was a man to work with whom was to form a friendship which rapidly mellowed into reverence." Of unusual power, both physically and mentally, he yet possessed a striking gentleness of disposition which rendered him singularly attractive in all his personal relations. Billroth is an excellent example of the true genius, as Dr. Johnson has defined it—"a mind of large general powers, accidentally determined to some particular direction." It is probable that he would have been distinguished in any sphere of activity, but in his earliest years his mind exhibited a distinct trend which left no doubt as to his inclinations. Music was his favourite subject, and to it, so far as his mother's incessant protests would allow, he devoted the whole of his energies, to the exclusion of his regular school studies. He lived, however, in a medical atmosphere, which proved sufficiently powerful to determine the direction of his future career. Professor Seifert, his uncle, had great influence with him, as also had Professor Baum, an intimate friend of the family. Moreover, his private tutors, of whom he appears to have had much need in his school studies, happened always to be medical men. On leaving school and matriculating at the University of Greifswald—the nearest university to his native

[1] *Theodor Billroth in Zürich, 1860-1867.* Von Dr. Arnold Huber. Zürcher Medizingeschichtliche Anhandlungen. Erster Band. Herausgegeben von G. A. Wehrli und H. G. Sigerist. Zürich: Seldwyla. 1924. (Med. 8vo, pp. xiv + 192; 6 plates. Brosch: Schw. Fr. 8; geb.: Schw. Fr. 10.)

island of Rügen—he entered as a medical student, but gave up the whole of his first term to the study of music. Professor Baum, however, took him with him to Göttingen, and his medical career was thus definitely fixed. Billroth possessed an extraordinary vitality, and was obsessed with a craving for work. His day's labours began at 5 a.m. with an hour's practice on the violin; from 7 to 8 he held his operative surgery class, from 8 to 9 studied surgical pathology (at this period he was preparing his great textbook, the first edition of which appeared in 1862), at 9 he visited the wards, from 11 to 12 he gave a clinical demonstration; he operated from 12 to 2, at 3 he returned to surgical pathology and microscopical research, occasionally taking minor operations in the course of the afternoon, and at 6 he again met his class. In the evening a break was always made in the day's work—a visit to a friend's house or some festivity at home, for he was a companionable man, and, moreover, a lover of home life. Music, naturally, figured largely in these festivities, and, indeed, seems to run like a thread through his whole life. There is ample evidence, from expert sources, that he was no mere amateur, but an admirable executant and critic. He instituted and himself took part in a string quartette at his own house, and was to some extent a composer. Dr. Huber reproduces an amusing example of Billroth's musical capacity in the shape of a medical prescription set to music in excellent twelve-part counterpoint for instruments. The day's work, however, did not end here. "He worked mostly at night," writes Dr. Meyers, "for then new ideas come most readily for operations and literary work; and he could generally be seen at night at his open window, working far into the night, sometimes till dawn, thinking and smoking his cigar, which could never be too strong." He was a giant in strength, and probably one of the happiest of men, though he liked to represent life as a symphony of major and minor harmonies interwoven. He had his share of life's troubles: the permanent invalidism of his only son was a constant grief, and the death of two of his three young daughters within a few months wellnigh unhinged his mind for a time. "I tell you in secret," he writes to a friend, "I have wept for nights on end, so you may know the depth of my sorrow." When Billroth left Berlin, where he had acted as Langenbeck's first assistant, and took up his post at Zürich, the main concern that occupied his mind was the management of wounds. This subject was, in a sense, forced upon him, for nearly 50 per cent. of his cases were injuries, mostly of a severe kind; septicaemia and pyaemia were rampant, often necessitating closure of the wards, and, as he himself has stated, "our progress here is over heaps of corpses." He held at this period that the healing of wounds is normally an afebrile process, and the occurrence of inflammation in them an accidental complication, due to contamination by minute particulate substances of unknown nature, which adhered to dressings, bedding, the whitewashed walls, the clothes and hands of nurses and surgeons; moreover, he considered it possible that infection was at times conveyed from patient to patient and from wound to wound. In the light of these opinions he very soon detected many glaring defects in the hospital; and reforms in such matters as water supply, drainage, ventilation, the separation of the dead-house from the hospital, the exclusion of the *post-mortem* porter from the wards, and the frequent cleansing and repainting of the wards were carried out under his supervision. These matters absorbed much of his time and energies, and furnished material for reflection and study in relation to wound infection. His fundamental principle was that the accidental contaminations of wounds were to be combated by absolute cleanliness. In 1864 Billroth had a call to Heidelberg. There was, however, still much to be done at Zürich, and, moreover, there were both the means and a readiness on the part of the faculty to assist him in his reforms. These were lacking at Heidelberg, and he expresses regret, as a German, that the Swiss university should be able to serve as an example to the Heidelbergers in this respect. Without a free hand for his reforming activities the appointment lacked attractiveness; he declined the offer. By 1867, however, his work at Zürich appears to have gone as far as he could carry it, and the absence of any forward movement there made him think of other spheres of activity. On the death of Professor Schuh his thoughts turned towards Vienna, and he put himself in communication with the authorities there. "They received my Vienna fancy in a very friendly way," he writes. "I do not think, however, that anyone in Austria has the least notion of reform in any branch; but if I were offered the appointment, of which I see no chance at present, I would accept it, provided they gave me a free hand for reforms." Much to his delight, he obtained the appointment that same year; he was then in his thirty-seventh year, and evidently looked forward with pleasure to a life of renewed activity, for, writing from his new post to an old friend in Zürich, he says, "None of my colleagues here are under 55, and most are over 60. I am the only baby among them, and I take full advantage of this quaint role; I am beginning to be a veritable *enfant terrible* for them. I boast of Zürich, and tell them what a wretched place this is in comparison." Thus he found himself again in congenial surroundings, and, moreover, in the metropolis of the musical world. At this point Dr. Huber closes his narrative.

THE LONDON FIRE BRIGADE.

WITH the intention of familiarizing the great mass of Londoners with its beneficent activities, the London County Council is publishing a number of booklets at low prices. The latest of these sets forth in an attractive manner the history, and describes the work, of the London Fire Brigade.[1] The brigade was created by the Metropolitan Fire Brigade Act of 1865 out of the fire establishment previously maintained by the insurance companies, the organization supported by the Society for the Protection of Life from Fire, and the ancient parochial arrangements—such as they were. There are, we believe, much burdened, but no doubt misguided, ratepayers who think that some of the Council's activities are misdirected and its expenditure lavish and unremunerative; but we cannot conceive of one of those persons cavilling at the maintenance of the Fire Brigade or grudging one penny of the money spent upon it. Its record is a brilliant one, for its officers and men have for sixty years offered splendid examples of efficiency and gallant devotion to duty. During the war we necessarily heard little of the work of the brigade. All that we knew was that, despite twenty-five air raids, in which 922 bombs were dropped upon London, no fire was allowed to reach unmanageable proportions. We note that all men of the brigade go through a training in first aid, and that provision is made for the treatment of various casualties likely to be met with at fires, but we do not find any mention of any medical officer as in charge of such training and treatment. This booklet contains a most interesting account of notable recent events up to November last, including the Silvertown explosion and the air raids during the war. It seems to us admirably fitted to serve the purpose for which it has been published. It is fully illustrated, and contains a key map and hints on fire protection. We note that a booklet on public health is in active preparation, which should be of even greater medical interest than this one.

[1] The London County Council and what it does for London. *The London Fire Brigade.* With a foreward by Sir James Bird, Clerk of the Council. London: Hodder and Stoughton. 1925. (Demy 8vo, pp. 52; illustrated. 6d. net.)

Nova et Vetera.

AN EIGHTEENTH CENTURY PRACTITIONER: DR. ALBAN THOMAS.

FEW physicians nowadays would risk their reputations by giving diagnoses or prognoses of cases merely on a written or viva voce history and without seeing the patient; but for very many years, when travelling was tedious, difficult, and even dangerous, such methods of consultation were much in vogue. Certain taverns and coffee-houses were the resort of medical and surgical consultants, where on fixed days and at regular hours they could be found by apothecaries and surgeons who desired their advice. One of the best known of these places in the eighteenth century was Batson's in Cornhill, frequented by Mead, Blackmore, and others, and later by Sir William Blizard, surgeon to the London Hospital, who died aged 92 in 1835, and is said to have been the last to hold such consultations.

In the Sloane MSS. (4077) there are two letters from Dr. Alban Thomas of Cardigan to Sir Hans Sloane, giving the history of two cases and asking for advice as to treatment. For copies of these we are indebted to Dr. Alban Evans of Swansea.

One of the letters, dated "Wennalt, Novr. 30th, 1738," gives an account of the troubles of Thomas Knolles of that place, in the county of Pembroke, who suffered from obesity (weight 20 stone) and hydrocele, which latter was treated by free incision and was cured in "five or six weeks' time without any mortification which but too frequently happens in such cases." A worse malady for which Thomas sought the advice of Sir Hans was stone in the bladder, from which Knolles had evidently suffered for some years. Sir Hans sent a prescription, but no one seems to have entertained the idea of operation, which alone could have offered a prospect of relief.

The second letter runs as follows:

Most Honble Sr,

I have presumed upon the foot of former Acquaintance with your honr to recommend the Case of this Revd & worthy Gentleman to your perusal, well knowing you to have had more experience than any one of the Faculty now living not only in Cases of this inveterate nature but all others which Humane Bodyes are lyable to. Be pleased therefore to know that this gentleman is of a pretty gross habit of Body but free as yet from any hydropical Symtoms, of a moist phlegmatick Constitution no way Subject hitherto to any other Inflamatory feavers but the Small pox which he hath given an Acct of in his Letter to Mr Gell the Bearer hereof: He is Scorbutick in the highest degree but whether it approaches towards the Læpra Græcorum must be determined by your riper Judgement as also whether some preparation from the Viper may not be of use to him together with due Evacuations and a long Continuance of proper Antiscorbutick Alteratives, & your wonted Candour and Humanity will give me leave to acquaint you that I have used the unguentum Citrinum upon such Eruptions with good success in ordinary Constitutions but never without putting them under a Course of Physick for at least Six weeks together first. I heartily rejoyce that you Still, in Spight of Age honourably tryumph at the head of the Proffession: may you long continue so for the publick good: and I desire you would recollect me to be Your old Sincere friend and most obliged humble Servt

New Castle in Emlyn
Novr 13 1738

ALBAN THOMAS.

Sir Hans Sloane's directions for the treatment of this case, written in Latin in a crabbed hand and much contracted, are preserved with the letter. Dr. F. William Cock has been good enough to elucidate them for the benefit of our readers. The original runs as follows:

Venesect. fol anthem. pulv. viper. bezoardici pts h. s. sine theriaca mane cum apozem: sudorific. Elect. lenitiv. pro re nata merc. precipitat. et aq. miner. purge.

This, written out in extended form as a prescription, reads:

(Fiat) venesectio. (Recipe) anthemidis foliarum, pulveris viperæ bezoardici (pulveris) partes (æquales) horâ somni (sumendas) et cum apozemo sudorifico sine theriacâ, mane. (Recipe) Electuarium lenitivum pro re nata. Purgé mercuriale precipitate et aqua minerali.

Rendered freely into English the prescription would read:

Bleed the patient. At bedtime let him have a powder made of equal parts of camomile leaves, powder of vipers, and bezoar stone. In the early morning let him have a sweating draught without laudanum. As a laxative, let him take the compound electuary of senna as required. To purge, give mercurial precipitate and mineral water.

Dr. Alban Thomas's letters are addressed: "To The Honble. Sir Hans Sloan Barrt. Presidt. of the Royall Society &c. at his House in Great Russell Street Bloomsbury Square London." This address is curious, as Sir Hans lived on the south side of Bloomsbury, then known as Southampton Square, at the corner of the street of the same name, until in 1742 he retired to Chelsea.

The writer of these letters was a person of some note in his day, as we learn from a memoir written by Dr. Alban Evans and published in 1917 in the *Transactions* of the Historical Society of West Wales. Alban Thomas was an Oxford man, and, like many of his countrymen, of Jesus College. In 1708 he was librarian of the Ashmolean Museum, and in 1713 he was appointed assistant secretary and clerk to the Royal Society, of which at that time Sir Isaac Newton was president and Hans Sloane secretary. In 1718 he published a pamphlet entitled *A List of the Royal Society of London*, with the intention of popularizing the objects of the Society, and of making the scientific acquirements of the Fellows useful to the community. He does not seem to have taken his medical degree at Oxford, for in 1718 he received the diploma of M.D. from University and King's College, Aberdeen. In Meyrick's *History of Cardigan*, 1808, there is an account of the love affair which culminated in his first marriage. Like Viola in *Twelfth Night*, Thomas was employed by a friend to negotiate a marriage with a lady in London, who, like the Countess Olivia, intimated to the young physician that were he to woo her for himself he would not be unsuccessful. The rejected but chivalric friend insisted on the doctor's addressing the lady on his own account. He offered and was accepted, and the course of true love was only troubled by his supposed lack of gentility. This lack, his father, a grave divine and poet, quickly supplied by sending him his emblazoned genealogical tree, tracing his family in direct line to the Lords of Towyn. A happy married life followed, only too soon to end with the lady's death in childbirth.

Alban Thomas got into political trouble in 1723, when he was suspected of taking part in a Jacobite plot, and when the storm had passed over he retired to Wales, where he married a second time. He died in 1771. Of his library is extant a copy of the *Mikrokosmographia* of Helkiah Crooke, a tall folio dated 1615, but published in 1616, which he has annotated. This was a compilation, a "Description of the Body of Man," based upon the works of Bauhin and Laurentius, as Sir Norman Moore states in the *Dictionary of National Biography*, but ignoring, even in the second edition, the discoveries made by Harvey, although the latter's lectures on the circulation were delivered early in the year 1616. A finely bound copy is in the library of the Royal College of Physicians of London.

MEMORIAL GATES FOR THE NEW BUILDING.

IN the JOURNAL of January 10th an account was given of the progress made in completing and equipping the new headquarters of the British Medical Association in Bloomsbury, under the direction of the architect, Sir Edwin Lutyens, R.A. This included a brief note of the fact that ornamental wrought-iron railings and gates, to complete the main quadrangle and to serve as a memorial to members of the Association who lost their lives in the war, were being made by the Birmingham Guild, in consultation with the architect.

The work of fashioning the gates was begun in September last and is now almost completed; it is expected that they will be placed in position at the front of the courtyard in the course of the next few weeks. The design, for which Sir Edwin Lutyens is responsible, is generally based on the eighteenth century tradition of smith's craft in this country, with leaf-work and scrolls as the main feature. The decoration over the central gateway will

bear a bronze dedicatory tablet with the inscriptions "Memory and praise" and "Faithful hath been your warfare." The total width of the gates, with their screens, is 60 feet; the height, at the centre, is 24 feet. Arrangements for the official opening of the new house of the Association are proceeding, and it is expected that the opening ceremony, including the dedication of the memorial gates, will be in the early part of the week beginning July 13th.

The following note on the making of wrought-iron gates, by Mr. C. A. Llewelyn Roberts, managing director of the Birmingham Guild, Ltd., will no doubt be read with interest by many members of the Association.

The Making of a Wrought-iron Gate.

The traditional craft of wrought-iron work, practised in this country in the eighteenth century—largely influenced by Tijou's work, as seen, for instance, in the examples at Hampton Court—is now almost a lost craft. It naturally suffered from the change in style of architecture of later periods. During the Classic revival the craft still to some extent continued in the work of the Adam brothers, but it was gradually losing ground.

At the present day, therefore, in making a wrought-iron gate in this tradition a special effort has to be made to obtain the skilled craftsmanship which still does exist, and to direct its enthusiasm in the old methods. As far as these methods go, there is no great difficulty, because in the making, in the forging, and in the fitting of a gate the practice is the same as in the past; but, unfortunately, the artistic skill and the feeling given to the work of that period are not now so easy to obtain.

The actual gate starts with the design—of course, drawn to scale—and then full-size drawings are made of its form, in conjunction with the smith who is responsible for carrying out the work, so that the forms are such as may be really appropriate to the craft. On this matter the intimate technical knowledge of the smith is essential. These drawings being ready, the work can proceed. In the first instance, rolled iron bars of various sizes are obtained, and it may be mentioned in this respect that the rolled iron of the present day is largely inferior from the point of view of malleability and nature to similar material used in the past, which adds to the difficulty of the modern smith in getting the same results. The material being obtained, it is then, with regard to the plain bars of the gate, cut to the necessary lengths, and the upright members are fitted to the horizontal members by passing one bar right through a hole in another, or by being tenoned—that is, by forging the bar down to a peg at the bottom, fitting this into a hole in the other bar, and riveting over it; or, the bars may be "halved" together, a notch being cut out of each bar so that when together the bars are in the same plane; a rivet is then put through this joint. As regards this part of the work, representing the general framing of the gate, it is probably done better than it was in the past because more accurate mechanical appliances are available for the making of such joints.

When, however, it comes to the forging of the scrolls and leaves it is here that skilled craftsmanship must be united with artistic instinct to obtain results equal to those of the best masters of the past. The scrolls, of course, are forged and welded together—a process that any ordinary smith knowing his job can do. But the result depends upon the feeling of the smith for beautiful lines and forms, such as the good tapering of the work down from one end of the scroll to another, which gives character to the work and the form and outline of the scroll itself. There is no quick way about this: the success of such work depends entirely upon the knowledge and ability of the craftsman.

The leaves themselves are made out of thick rolled sheet-iron beaten up to the form required. It is often necessary to make the leaf red-hot during this process in order to obtain the relief required. When the leaf is made it is riveted through to the bar of the scroll work, and also welded to it, thus ensuring a perfectly strong fixing.

In the arrangements of the scrolls and leaves, although, of course, this depends primarily upon the design and the full size lay-out, nevertheless much is left to the smith doing the work. If he is unresponsive to the beauty of what he is doing, even a slight disarrangement of the form may destroy the harmony of the result. But if, on the other hand, he appreciates the beauty of the arrangement of the forms and line, then he is more likely to enhance the success of the result.

The amount of labour in making up such a gate is far greater than one would imagine from the finished work, for there is not a part which has not received careful attention by the craftsman, the whole of it being done by hand throughout, except the purely mechanical fitting of straight bars.

CONFERENCE OF MENTAL HOSPITAL AUTHORITIES.

(*Continued from page 808.*)

PROVISION OF MENTAL HOSPITAL ACCOMMODATION.

THE second day's proceedings at the National Conference of Mental Hospital Authorities on April 22nd were devoted to the consideration of further mental hospital accommodation.

Sir FREDERICK WILLIS, Chairman of the Board of Control, who presided, said that the Board desired to direct the attention of local authorities and visiting committees to the serious need for the provision of additional mental hospital accommodation. At the beginning of 1924 there was vacant bed space in all county and borough mental hospitals for 4,754 patients; the average yearly net increase of patients for the four years 1920-23 was 3,565. The position as regards accommodation had somewhat improved by the beginning of this year. The net increase of patients during 1924 was only 1,508. But it was clear that the needs of the country as a whole rendered it essential that the provision of further accommodation in the near future should be considered. It might be practicable to make a fuller use of the provisions of Section 25 of the Lunacy Act, under which patients could be sent from mental hospitals to Poor Law institutions; of Section 26, which authorized contracts with boards of guardians for the reception of patients in those institutions; and of Sections 55 and 57, which allowed absence on trial and boarding out; and it was also suggested that more extended use might be made of the provisions of Section 79, under which suitable patients might be discharged to the care of relatives and friends. In some cases nurses might be lodged in hostels outside the institution, thereby liberating a certain amount of institutional accommodation. Some patients at present in asylums might properly be transferred to institutions for mental defectives. Notwithstanding every effort, however, it seemed necessary to face the question of providing new accommodation. In some instances it might be practicable to extend the accommodation in existing institutions by the provision of admission hospitals, the erection of separate villas, and such additions as might be determined by local requirements.

Dr. G. F. BARHAM (Claybury) dealt with this last point. He supported the view that there should be admission hospitals with villas for convalescents. A very large number of early cases required to be dealt with annually, far beyond the scope of the clinics. The large mental hospitals could afford greater scope for occupation treatment than any form of clinic could provide, and there was the highly important consideration that mental hospitals, deprived of a fully equipped admission unit, capable of treating all varieties of mental disorder, must inevitably suffer in efficiency. Surely it would be possible to provide admission hospitals effectively dissociated from chronic insane patients and linked up with outside medical organization. To be effective the admission unit must be organized on the villa system, out of the sight and hearing of the main hospital, and must furnish means for the classification of cases, in addition to sex separation, together with sufficient provision of treatment rooms to meet the growing complexity of therapeutic measures. It was held in some quarters that hospitals of 2,000 beds were too large, but, on the other hand, the wealth of material, the facilities for research, and the education both of the medical and nursing staff increased with the size of the institution. He was of opinion that asylum authorities should not be afraid to enlarge their institutions, for additional accommodation could only add to the efficiency of the whole organization, besides being more economical.

A brisk discussion ensued, in which many chairmen of visiting committees and of asylum boards participated, and the possibilities of extended use of Poor Law accommodation, the sending out of cases on trial, boarding out, and discharge to relatives, the provision of admission hospitals, of nurses' homes, and general enlargement of the institution, were explored. Mr. C. L. FORESTIER-WALKER, M.P., suggested a series of regional conferences to discuss the problems and difficulties in the various areas, and it is probable that these will be arranged.

PUBLIC HEALTH IN ITALY.

BY

PROFESSOR DR. ARTURO CASTIGLIONI,

MEMBER OF THE CHIEF COMMITTEE OF THE ITALIAN BOARD OF HEALTH; PROFESSOR IN THE UNIVERSITY OF PADUA.

AFTER the war medical and university circles turned their attention to the study of the great problems of social hygiene and of preventive measures, strongly supported by the Government. Italian legislation has lately adopted many important hygienic measures, and both in Parliament and in medical associations hygienic questions are the order of the day. A most admirable institute was founded immediately after the war by Professor Ettore Levi, under the presidency of Luigi Luzzatti, the great statesman, repeatedly Minister of Finance and President of the Council of Ministers. This "Institute for Hygiene, Preventive Measures, and Social Assistance" collects all publications relating to the study of social hygiene, including propaganda work. Representatives of Ministries, large industries, chambers of commerce, banks, and of the working classes are collaborating in this work, which is outside politics, and operates from a social and economic point of view. The fight against infective and venereal diseases, and the welfare of infants, mothers, and of the working classes, are sustained by a most active propaganda through the means of books, lectures, courses of instruction, and schools—a propaganda which is conducted on parallel lines with those of other countries. The international relations of the institute secure the supply of much material for medical research, and doctors can study the statistics of all countries, the legislative measures applied by each, and their propaganda methods. For these reasons the Italian institute, which should be visited by foreign doctors coming to Rome, is just as important from a scientific as from a social point of view.

One of the problems which have most interested Italian scientists is the high mortality through tuberculosis during the great war and after. Immediately before the war—namely, during the period 1910-14—deaths through consumption were steadily decreasing, and had reached the minimum of 1,500 deaths per annum. In 1915 there was a sudden rise to 1,576, and during the three subsequent years the following figures were noted: 1,674, 1,749, and 2,090. The last figure is that of 1918, when there was a great epidemic of Spanish influenza in Italy. From that period onwards the figures gradually fell to a minimum of 1,423. It should be noted that during the first years of Italian statistics deaths through consumption stood at 2,128. All the above figures relate to one million inhabitants. Most important conclusions can be gathered from the above statistics, collected and published by Professor Niceforo of Naples University. First of all, they indicate that the war was indeed the cause of a sudden increase in tuberculosis, but that nevertheless the mortality curve did not reach the high point of 1887-89. It is interesting to observe a similar occurrence also in other important movements, not only relating to illnesses and to mortality, but also economic and social. Secondly, it must be noted that the decrease in deaths after the war brought down the curve of tuberculosis mortality to the pre-war point; this decrease, however, is not what it would have been had there been no war and had the same decreasing pace been kept up for tuberculosis.

Preventive Medicine.

In the Italian Congress of Social Eugenics, which took place in Milan a few months ago, several attending the Congress devoted deep study to the problem of precautions to be taken through legislation for the protection of future society from the perils of delinquency, drunkenness, and mental and nervous diseases generally, especially from the hereditary point of view. No practical result seems to have followed the adoption in some North American States of the "Act to prevent procreation," the object of which is to prevent criminals—and in some cases also idiots, mental defectives, and those afflicted with congenital insanity—from having children. The legislation for compulsory sterilization, proposed by the Laboratory of Experimental Eugenics of Long Island, is still only a suggestion. Although at the Italian Congress it was recognized that the State has the duty of protecting, not only the individual, but also society and the race, the conclusion was nevertheless reached that it would be very difficult in practice to introduce similar measures in Italy. Efforts must therefore be made to prevent the reproduction of "undesirables" by instituting sanitary centres and matrimonial control. The first measure would serve the purpose of collecting all information relating to the various subjects, and of keeping an eye on their physical and mental development, from the strictly hygienic, the social, and the medical points of view. Matrimonial control should be established by requiring a medical certification of sound constitution and eugenic capacity before marriage. Professor Medea, who upheld these projects before the Congress, also pointed out how necessary it was to provide propaganda literature for the education of the people and for the development of an enlightened public opinion. In Milan, meanwhile, a psychiatric dispensary of the League of Mental Hygiene has been formed, not only for study and research, but also as a centre for active propaganda. Psychiatric social workers must attend to the unsound, and at the same time circulate useful knowledge.

In the fight against cancer and tuberculosis, especially as regards measures in early infancy, Italy has made a fine start this last year or so, and, thanks to Government support, new nursing homes, dispensaries, and open-air schools are constantly being opened. A great stimulus to the foundation of new institutions has been the King's suggestion that any act of homage Italians may like to render him on the twenty-fifth anniversary of his reign should take the form of public welfare work, preferably related to hygiene. Milan has set an example by founding an institute for cancer research. The Lord Mayor of Milan, Professor Mangiagalli, a senator of the kingdom and a famous clinician, has taken the initiative in this excellent work by collecting in a few weeks considerable sums of money, which will ensure the success of the enterprise. Many other towns have decided to found institutions for the fight against consumption, and throughout Italy there is a movement for organized activity which promises well, especially in the field of preventive measures. Italy, with her wonderful shores and the mild climate of her southern provinces, can construct a really practical programme in this sphere of work, especially in connexion with the welfare of infants. All the associations engaged in this fight against consumption will meet in a congress to be held at Naples from May 25th to 28th. This congress, keenly awaited in medical circles, will discuss such particularly important questions as treatment in mountain nursing homes, on the sea coast, and in nursing homes on plains. The problem of preventive vaccination will also be fully discussed.

An exhibition will take place at the same time, at which the leading nursing homes and health institutions will be represented, and where apparatus and preparations for the cure and diagnosis of consumption, and literature on antituberculosis associations and legislation, will be on view. Naples is a peculiarly suitable place for this congress, since it was the first city in the world where the Government—at the instigation of the famous doctor Domenico Cottugno—issued an order in 1782 that doctors should notify all cases of consumption, and founded a special hospital for consumptive persons.

During the recent discussions in the Italian Parliament on the budget for the interior, doctors repeatedly urged the Government to take greater interest in hygienic problems. The Hon. Professor Messedaglia recommended the adoption of stronger measures for the definite conquest of malaria, and, supported by medical deputies, a bill was advanced limiting the number of establishments for the sale and consumption of alcoholic drinks to one establishment per 1,000 inhabitants, instead of one per 50, as fixed by law in 1913. At the same time the sale of wine, beer, and other alcoholic drinks is to be forbidden after 11 p.m. and before 10 a.m. The Italian Association for Hygiene, presided over by Professor Achille Sclavo, rector of Siena University, has performed splendid work in the fight against alcoholism;

it has also asked that special homes for inebriates should be opened, and that the Government should consider the possibility of modifying the article in the Penal Code which enacts that drunkenness lessens the crime instead of increasing it. The general decrease in cases of drunkenness which has been observed in Italy after the war, decrease being also noticeable in the consumption of alcoholic drinks, is due to a great extent to the Government's restrictive measures, and it can therefore be expected that the propaganda of hygienic institutions, especially in schools, will result in a gradual but marked decrease in delinquency.

New Universities.

Two new universities were opened in Italy this year, regardless of the opinions of most learned men, who think that the existing universities are already excessive in number. However, the Government has introduced English methods into its new university law by declaring that new universities may only be opened, and minor universities be maintained, if the borough or province is willing to bear the bulk of the expenses relating thereto, assisted by a small Government contribution. Milan has quickly collected funds and opened a first-class institute, specially designed for medical studies. The clinics, already in existence as schools for graduation (noteworthy amongst them the clinic founded and run by Professor Devoto, a leader of the Italian medical faculty), have all passed under the control of the new university, which has also opened a number of new institutes, appointing some of the best known Italian scientists to run them. In view of the progressive development of the city of Milan, the centre of Northern Italy's industries and commerce, and thanks to the energy with which Senator Mangiagalli, who is also the rector of the university, has undertaken his task, it can confidently be asserted that the University of Milan will soon hold a leading place in Italian scientific circles. Another university with a medical faculty has been opened in Bari (South Italy), which hitherto only had the University of Naples. The Bari University also has some fine medical institutions; its rector is Professor Pende, whose name is well known for his studies in endocrinology and pathology.

Scotland.

THE EFFECTS OF HOUSING ON EPIDEMICS.

At a meeting of the Public Health Subcommittee of Edinburgh Town Council on April 21st, Dr. William Robertson, M.O.H., submitted a report on the effect of housing on the spread of infectious disease. Since the long and serious epidemic of measles and whooping-cough began, 3,315 cases of the former and 1,764 cases of the latter had been notified, 548 cases of measles and 259 cases of whooping-cough had been treated in hospital, and the number of visits paid by nurses was 2,996. Much difficulty had often been experienced in caring for children in houses that were on the border-line of being overcrowded. Subletting was a regrettable feature of the housing shortage, and instances had been met in which two families were attempting to live in two- and three-roomed houses. Under such conditions, when measles or whooping-cough broke out the spread of infection became unavoidable, and the proper nursing of infected children in such circumstances was almost impossible. The congestion caused by the tenement system, where too many families lived in too close contact with one another, and where the children were compelled to rub shoulders in the long passages and lobbies of three- and four-storied buildings, was another great factor in infection. Experience had shown that large numbers of the cases occurred in houses entered by common stairs.

PURE MILK COMPETITION.

On the suggestion of the Board of Agriculture for Scotland, a competition was recently organized by the Public Health Committee of Edinburgh Town Council for dairymen within the city boundaries. Councillor Harvey, Convener of the Public Health Committee, who presided at the prize distribution on April 16th, said that the success attained had fully justified the enterprise; the competition had shown that any dairy byre in the city might produce milk of Grade A standard. Investigations made by the veterinary department of the city some time before the competition had shown that 37 per cent. of the retail milksellers in the city were selling milk which conformed to the Grade A standard, which was essentially clean milk, with a very low general bacterial content, and practically no coliform organisms. The earlier regulations had been principally directed towards the cow and the cowshed, but under the new regulations more attention was paid directly to the milk, and its source of supply was considered immaterial so long as the product itself was satisfactory. The Public Health Committee was satisfied that the supply of milk from within the city boundaries would be more easily and efficiently supervised than a supply from outside. Under existing legislation the powers of local authorities to give practical assistance to the milk industry were limited, but local co-operation and harmonious co-ordination between the authority and the trade was possible. Sir Robert Greig, Chairman of the Board of Agriculture for Scotland, congratulated the Public Health Committee and the competitors upon the fact that the competition was the first of its kind in this country. Few countries produced a better or larger supply of clean milk than the United States of America and Canada, and yet in those countries milk was often produced in buildings which our local authorities in this country would not allow for that purpose. There was an almost unlimited field for the production and consumption of milk, but consumers had not yet been educated up to the fact that milk was one of the cheapest and most valuable of foods. In America people consumed about three times as much milk a head as we did. In Chicago cars might be seen going around with bottles of milk which workmen bought in the street and drank, but they had a long way to go in Scotland before they would find the average workman stopping to drink a bottle of milk. Medals and certificates of merit were then presented to the dairy workers.

CHANGES IN FOOD SUPPLIES.

At a meeting of the Council of the Scottish Federation of Grocers' and Provision Merchants' Associations, held in Edinburgh on April 15th, it was intimated that a letter had been received from the Scottish Board of Agriculture referring to the declining consumption of oatmeal in Scotland, and asking six questions. The Federation replied that the decline in the consumption of oatmeal which had become apparent before the war was to be attributed to a change in the national diet; practically every household had ham and eggs or fish for breakfast, and the average housewife would not cook two courses, so that porridge was left out. The decline in consumption was over 50 per cent., judging by the sales of oatmeal twenty-five years ago. The consumption of flaked oats and similar preparations was increasing and might in part account for the smaller use of oatmeal, although people as a rule preferred home oatmeal to foreign oatmeal. The Federation thought that enterprise in advertising and educating the public would soon stimulate the demand. The Federation had sent a deputation to the Board of Health to represent that serious disturbance would be occasioned if the use of preservatives in foods was entirely prohibited, as proposed in the draft regulations recently issued. The deputation had suggested also that labels on articles containing permitted preservatives, upon which was stated the amount of preservative present, would serve no useful purpose, but would alarm consumers; it would be sufficient if the label stated that the article "contained preservatives conforming with the Board of Health regulations." The opinion was advanced that cold storage could never take the place of preservatives because facilities throughout the country were quite inadequate.

CARE OF THE BLIND.

At a social meeting of the directors in the industrial section of the Royal Blind Asylum and School, Edinburgh, Mr. Ewan F. McPherson, Chairman of the Scottish Board of Health, said that any help given to remove the handicap from which the blind suffered was, until lately, voluntary. Edinburgh had given a lead to the country in this respect,

for the asylum had now been established for 132 years and at the present time 350 blind persons were being helped. By the Act of 1920 the duty of doing something to promote the welfare of the blind was placed upon town councils and county councils. It had taken some time to get the Act into operation, but the town and county councils, education authorities, and voluntary institutions were co-operating, and before very long every blind person who was suited in any way for any occupation would get such training as would fit him or her for that occupation.

DUNDEE MENTAL HOSPITAL.

At the quarterly meeting of the directors of the Dundee Royal Mental Private Hospital, Dr. A. B. Dalgetty, medical superintendent, reported that during the quarter 75 persons had been treated, of whom 5 had been voluntary patients. Voluntary patients recovered as a rule more quickly than the others. Some voluntary patients had remained in the hospital for six months, twelve months, and more.

CARE OF THE CHILD IN SCOTLAND.

The annual general meeting of the Royal Scottish Society for Prevention of Cruelty to Children was held in Glasgow on April 22nd. Lord Provost Montgomery, who presided, in moving the adoption of the report, said that last year the society had dealt with 7,588 cases, representing 22,156 children, who were visited throughout Scotland. Sir John M. Macleod, Bt., in seconding the report, said that one of the striking features of the changes in progress to-day was the desire on the part of one section of the community that all activities should be centralized, including the activities of benevolent and charitable institutions.

Ireland.

THE LATE PROFESSOR A. C. O'SULLIVAN.

SHORTLY after the death, last year, of A. C. O'Sullivan, M.D., S.F., professor of pathology in the University of Dublin, a committee was formed to collect funds in order to perpetuate the memory of his connexion with Trinity College, and especially with the School of Pathology, of which he was for nearly thirty years the head. Over £1,000 has been collected, and with this sum a scholarship has been founded in the School of Physic. The O'Sullivan Scholarship, valued at about £48 a year, is to be awarded, on the nomination of the School of Physic Committee, without examination, to the most deserving candidate, consideration being given to his record in the medical school, in the University generally, and also to his financial circumstances. Besides the foundation of the scholarship a bronze tablet has been erected in the School of Pathology, which bears the following inscription:

ALEXANDRO CAROLO O'SULLIVAN
HUIUS COLLEGII SOCIO
QUI IN HAC SCHOLA SCIENTIAE PATHOLOGICAE CATHEDRAM
PRIMUS OBTINUIT
VIRO MAGNANIMO OMNIUMQUE ARTIUM CAPACISSIMO
LUGENS UNIVERSITAS
HOC MONUMENTUM POSUIT
MCMXXIV

The tablet was unveiled by the Provost of Trinity on April 21st. After a statement by the honorary secretary, Mr. E. J. Gwynn, relative to the collection of the fund and its application, Dr. W. G. Smith, on behalf of the subscribers, presented the scholarship and tablet to the college. In the course of his speech, he said that they were assembled to pay the last possible mark of respect to the memory of a man of "infinite variety" and one endowed with remarkable intellectual gifts, who had been prematurely taken away. His versatile and nimble brain was equally at home in his favourite subject of mathematics, or in languages, or in the practical work of the laboratory, or in the deft use of his hands as an expert yachtsman. He had cultivated with such success his special subject of pathology that he was acknowledged as an authority. The Provost, in accepting on behalf of the college the scholarship and memorial, thanked Dr. Smith, the senior Fellow of the Royal College of Physicians, for what he had said. No one in recent years had so well carried on the old Trinity College tradition of general culture as distinct from merely professional knowledge as Dr. O'Sullivan. He had an austere sense of the meaning of exact knowledge, was impatient of anything like humbug or pretence, and very scornful of half-knowledge. The only other adjective used of him in the felicitously worded inscription was "magnanimus"—great-hearted, great-souled—and that explained why he had so many friends. The Provost spoke feelingly of his long friendship with Dr. O'Sullivan, extending from the days when they were undergraduates together. He was glad that a permanent memorial to Professor O'Sullivan would rest in the School of Pathology, to which he devoted himself more and more as the years passed by, and that so his name would be kept before the generations to come. The Provost then unveiled the memorial. The many friends and former pupils of Professor O'Sullivan, scattered over the world, will be glad to know that now a permanent memorial has been erected in Trinity College, which he served so faithfully all through life and which he loved so well.

England and Wales.

HEALTH PROPAGANDA.

THE Minister of Health, the Rt. Hon. Neville Chamberlain, M.P., received on April 23rd a deputation from the Society of Medical Officers of Health, introduced by Dr. J. Wheatley. The deputation represented that they, in their capacity of men of scientific training in constant touch with the general public, had found that there was an urgent need for further propaganda directed to the general improvement of health rather than to the combating of special diseases. They thought that statutory provision should be made for local authorities to carry on health propaganda. As a next stage a central body should be set up to advise local authorities, who sought their help on the way in which propaganda should be carried out locally, and to assist them by the provision of lecturers, literature, and other means of propaganda which could best be organized by some sort of central authority. The society thought that in its special position it would be able to give valuable help to such a central body, and that medical officers of health should themselves be included in its membership. The Minister, in reply, said that he fully agreed with the deputation as to the necessity for propaganda on health questions, and he gave his assurance that he proposed to take steps to have the necessary powers conferred on local authorities forthwith. He hoped it might be possible to do so this year, or, at any rate, next year. He also agreed that some sort of central body could give valuable assistance; and when the necessary legislation had been passed he would give careful consideration to the question of the proper constitution of such a body and the functions which should be assigned to it.

CARE OF MENTAL DEFECTIVES.

During the last ten years the Leeds Voluntary Committee for the Care of the Mentally Defective has undertaken the supervision of those mental defectives who are not resident in institutions; altogether 738 have been dealt with, and at present 436 are under supervision. The home conditions in the case of 135 of these defectives were considered unsatisfactory, and the annual report of the committee draws attention to the evils arising from intensive overcrowding of these defectives. Systematic visiting of the homes has produced good results, but as there is no statutory obligations on the parent or guardian to co-operate with the local authority in promoting the safety and well-being of the defective, a certain number of the mentally deficient become a menace to the community. It is suggested in the report that since such supervision is an established method of dealing with the mentally defective classes the obligations and responsibility of parents and guardians ought to be specifically defined. The Leeds committee was the first in the country to provide an employment centre for feeble-minded youths and men, the industries being boot-making

and repairing, rug and mat making, and wood chopping and bundling; fifty-one persons were employed at the centre during the year. The average sales amounted to £12 a week, as compared with £10 in the previous year. Small allowances were made to those under training, and, in addition, many had their boots repaired and their clothing supplied without cost. The centre has already resulted in a financial saving to the local authority, since but for its existence at least ten of the defectives now accommodated there would have had to be maintained in certified institutions, where each would have cost not less than £60 a year.

KING EDWARD VII SANATORIUM, MIDHURST.

The eighteenth annual report of the King Edward VII Sanatorium, Midhurst, shows that 294 patients were admitted to the sanatorium during the twelve months ending June 30th, 1924. They included 20 readmissions and 19 who remained in residence too short a time to be considered in the record; during the same period 234 patients were discharged. The demand for beds has remained steady, the average number of applicants on the weekly waiting lists being: for men 6.3, for women 6.7. Treatment by graduated rest and exercise remains an important part of the sanatorium routine. Results are given of the treatment of eight patients by the induction of artificial pneumothorax. The report also includes an account of the work of the statistical department, relating to approximately 4,000 cases discharged from the sanatorium.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Budget.

THE Chancellor of the Exchequer introduced the Budget on Tuesday last. The reductions in income tax and supertax are of particular interest to many individuals, but the most important part of the financial scheme Mr. Churchill unfolded is the extension of State insurance. It includes pensions for widows and orphans, beginning next January, and a reduction of the qualifying age for old age pensions from 70 to 65, to begin in January, 1928.

Mr. Churchill said that the consuming power of the people was maintained, and thrift continued, despite unemployment and trade depression. Floating debt had been reduced during the past year by £32,500,000 and external debt by £4,000,000. Larger funding operations would be undertaken in the lifetime of the present Parliament. This year £50,000,000 would be devoted to the Sinking Fund. The country had been paying off war pensions on a considerable scale. In 1919 the total capital liability for pensions had been £1,000,000,000, and the yearly expenditure £100,000,000. That capital liability was now reduced to £760,000,000, and the annual charge £67,000,000. A strict perseverance in paying off pensions would relieve the taxpayer by a further £2,000,000 or £3,000,000 each year. The Government had decided to allow the restrictive legislation against the export of gold to lapse on December 31st and to issue till then a general licence for the export of gold and bullion. To reintroduce gold coinage at present would be an unwarrantable extravagance, and in the public interest the use of notes must continue. Arrangements had been made for paying our debt to America till the end of the year, and further credits were available in America. The estimated expenditure of 1925-26 was £799,436,000; this was disappointing. He trusted that a period of settled government would permit the overhauling and reduction of expenditure. After this year reduction of taxation could only be achieved by reduction of expenditure. Improvement in trade would only be gradual, but he was not providing for any war abroad or for industrial convulsions at home. He was not budgeting for any repayments from European Allies, but they should not relax their efforts to obtain such repayments. He estimated that in 1925-26 the total receipts from taxes would be £711,000,000, against £689,702,000 last year. The income tax was estimated to yield £289,000,000, Customs and Excise £235,000,000, and motor vehicle duty £17,500,000. Receipts from non-tax revenue he estimated at £114,500,000, making the total estimated revenue for 1925-26 £826,000,000.

Death Duties.

The Budget surplus was £26,500,000, a sum satisfactory in itself, but not adequate to achieve the two great purposes of public policy—security for the home of the wage-earner and relief for the burdens resting on industry. It was imperative that he should fortify the revenue, and his scheme for doing so must be judged as a whole. Death duties on estates over £12,500, but not on the greatest estates, would be increased to yield £4,500,000 this year and £10,000,000 in a full year. Between £12,500 and £18,000 the death duty would be increased by 1 per cent; on £40,000 by 3 per cent., on £175,000 by 6 per cent. Thereafter the percentage of increase would diminish, and an estate of £1,000,000 would be taxed as now.

Luxury Taxes.

He proposed that the House should impose luxury taxes which no one would need to pay. One of these would be a new revenue duty, calculated by weight, on silk, natural or artificial, raw or semi-manufactured. A certain advantage would be given to the home producer. The revenue would be £4,000,000 this year, and £7,000,000 in a full year. In place of the hop control which was about to lapse, a duty on imported hops was to be levied, for four years, to produce £250,000 in a full year. The "McKenna duties" on motor cars and other goods would be reimposed, with the silk duties, from July 1st. The total yield of all these "luxury taxes" would be £5,300,000 in the first year and £10,000,000 in a full year.

State Insurance and Old Age Pensions.

Mr. Churchill announced that legislation would be proposed improving the income tax machinery and amending the succession duty law. He then turned to his proposals for improving State insurance, which, he said, though imperfect, was pre-eminent among the insurance systems of the world. The first object was to provide old age pensions before 70. The scheme, to be of use, must be contributory and compulsory, and must cover the whole wage-earning population of 15,000,000 who now came under the National Health Insurance Acts. It had been decided that in addition to the insurance payments now made 4d. could be paid by every man and 2d. by every woman in employment, and that the employers could also pay an additional 4d. per man and 2d. per woman. If all workers contributed from the age of 16, 10s. a week could be paid to widows and 10s. to the old worker at 65. A sum of 1d. for each insured person would be transferred from health insurance and unemployment insurance to the new scheme, which by the aid of a State contribution could be brought into operation by stages from January 4th, 1926. The present capital value of the additional liability to the State was computed at £750,000,000.

Mr. Churchill warned the House that, apart from the new pensions scheme, the Government's actuaries predicted a great growth in old age pensioners under the existing scheme because the span of human life was being prolonged and the survivors of the large increments to population in Victorian times were reaching pensionable age. The census of 1891 showed 5,200,000 persons between 40 and 50; that of 1921 showed 9,700,000 between those ages. The present annual cost of the existing old age pensions was £27,000,000. In ten years it would be £36,000,000; in twenty, £40,000,000; and in fifty, £60,000,000. This island in thirty years would have more than double its present old and feeble people and would have to support them with little more than its existing active population. To meet this, the contributions of employers and employed to the new pensions scheme were to be raised by 1d. per man and ½d. per woman each decade. By the tenth year the annual cost of the new scheme to the State would be £15,000,000, and by the twentieth £24,000,000. Thereafter it would decline. After 1926 the contributions to the new scheme would cover the existing old age pensions as well. The new scheme would cost nothing in the first year to the State. It was only from the third full year that the charge began to operate. The charges would be averaged over ten annual instalments approximating to £5,750,000 each year from 1926. A bill dealing with the scheme would shortly be introduced by the Minister of Health.

Widows of all men insured in the national health insurance scheme who became insured in the new scheme would get 10s. a week from January 4th next, with 5s. for the first child and 4s. for other children. All existing widows of men who were insured, if those widows were now mothers, would receive the same benefit as a gift till six months after the youngest child reached 14. The scheme affected 230,000 widows, and its capital value to each was £600. There would also be grants for motherless orphans. The progressive fall in war pensions would more than offset the cost of the new scheme.

Mr. Churchill further announced that from January 6th, 1930, all workers who had contributed for five years to national health insurance and for two years to the new scheme would receive 10s. a week at 65 without any means test. The same benefit would be paid to their wives at 65. All restrictions and means tests on old age pensions after 70 were to be swept away from July 1st, 1926, and about 100,000 would benefit.

Income Tax and Supertax.

Turning to remission of taxation, Mr. Churchill announced preferential remission of duty on Empire dried fruits, tobacco, wines, and sugar. The supertax was to be reduced to correspond with the increase in the death duties, thus encouraging the creation of new wealth. The rates of supertax would be halved up to £3,000, with lesser remissions thereafter. In income tax further advantage would be given to earned income. At present the allowance for earned income was one-tenth up to a maximum of £200. That would be increased to one-sixth, up to a maximum of £250. This deduction could be made in full on incomes up to £1,500. Persons over 65 with incomes of less than £500 would be granted this earned income relief, which would cost £3,000,000 this year and £7,500,000 in a full year.

Mr. Churchill concluded by announcing that in addition 6d. was to be taken off the standard rate of income tax, making it 4s. in the £. This would cost £24,000,000 in the first year and £32,000,000 in a full year.

The criticism of the Budget which was offered by Mr. Snowden and Mr. Lloyd George was very cautious and not hostile.

Correspondence.

THE MORTALITY OF APPENDICITIS.

SIR,—The excellent and thoughtful papers of Mr. Joseph E. Adams and of Mr. James Sherren (JOURNAL, April 18th, pp. 723 and 727) once more direct attention to this subject. Their information is so complete and their arguments so moderately stated that I should hesitate to intervene were it not to join in the note of warning which you so promptly, and I think wisely, sound in your leader in the same issue.

All surgeons must know that many cases of appendicitis spontaneously recover, even when complicated by peritonitis or abscess, but that many only do so after running the gauntlet of a long and dangerous illness. Even when under observation and control in hospitals disappointments occur, and they frequently happen when attempts are made to treat patients on conservative lines in their own homes.

I have watched the progress of the surgery of appendicitis in this district for over a quarter of a century, and during this time I have experienced the results of the recurring advocacy of the delayed operation. Every time this plan has been written about in the medical press and generally discussed, it has almost at once been followed by an increased mortality. The conduct of the case on conservative lines is not reserved for the operating surgeon who ought to be responsible, but is undertaken by another section of the profession, and in the hope of avoiding operation is eagerly accepted by a not inconsiderable section of the public. Thus delay is lightly countenanced; some cases are allowed to develop general peritonitis, many abscesses occur, many fortunately localize or remain so, but too frequently complications and a lengthier stay in hospital follow, and in the long run the mortality always rises.

The following is a record of my personal operations up to the end of 1924.

Mortality of Appendicitis: Personal Experience.

	Cases.	Deaths.	Percentage.
Group 1.—Acute appendicitis without peritonitis	102	0	—
Group 2.—Acute appendicitis with localized peritonitis	366	4	1.09
Group 3.—Acute appendicitis with flank or pelvic peritonitis or both	187	15	8.02
Group 4.—Acute appendicitis with diffuse peritonitis	89	26	29.21
Group 5.—Appendicitis with residual abscess	62	5	8.06
Group 6.—Appendicitis with primary localized abscess	373	10	2.64
Group 7.—Appendicitis — interval removals	755	3	0.4
Group 8.—Appendicitis with primary complications	19	8	42.1
	1,938	71	3.65

All the cases for which I have been responsible are included. Group 8 comprises complications like intestinal obstruction associated with acute appendicitis, pylephlebitis, and so forth, so that the percentage mortality must needs be high, but these cases are included for the sake of completeness.

I believe that, however the figures are used, they show that the mortality rises with the march of pathological processes. The latter do not attend on the clock, and a recognition of this fact long ago made me give up a classification of cases based merely on lapse of time. One patient may show an unlimited and severe peritonitis in less than twenty-four hours, whereas in another the inflammation may always remain localized.

Recognizing my responsibility as a teacher, I would strongly urge that every case of appendicitis should be operated upon while the disease is active. Only in a few fulminating cases the surgeon must know "no night, no day," but there should be no undue delay, though the surgeon of experience may recognize that the case may safely await his convenience from, say, late at night to the next morning, or from one day to another, and so forth. There are also cases in which some delay may be an advantage—to combat toxaemia, to allow the effect of drugs to pass off, to move the patient to better surroundings, etc.; but these considerations do not affect the general rule that *an attack of appendicitis should be cut short by operation*. The scope of the operation is a very different matter, and that must vary with the pathological conditions present and with the experience of the surgeon. A timely incision under a local anaesthetic, or the puncture of a pelvic abscess, may each save the life of a patient, so that the appendix may be removed later to prevent so serious a risk recurring. As a matter of fact, in over 95 per cent. of my own cases the appendix has been removed at the one and only operation.

But appendicitis must surely always have a mortality—and mainly the mortality of the occasional difficulty in diagnosis. Last year I had 85 cases without a death. So far this year there have been two deaths—one because some bronchial trouble associated with one of the exanthemata in a child led us to adopt the policy of the delayed operation; and one because the patient himself delayed too long before seeking the advice of his doctor. And even interval operations have some mortality.—I am, etc.,

Newcastle-upon-Tyne, April 23rd. G. GREY TURNER.

RECENT ADVANCES IN THE STUDY OF CARDIO VASCULAR DISEASE.

SIR,—Dr. Harrington Sainsbury, in his letter (BRITISH MEDICAL JOURNAL, March 28th, p. 633), questions whether the modern instrumental methods have led to a real advance in the study of cardio-vascular disease or if they have merely led to changes in our points of view. I am afraid this must remain a matter of opinion.

In his comments upon my reference to the effect of Sir James Mackenzie's work upon clinical cardiology, Dr. Sainsbury discusses some defects of the polygraph and restates his views regarding the uncertainty of the physiological interpretation of the venous pulse tracing as recorded by this instrument. That physiologists do not consider the present interpretation of the various waves upon a phlebogram as settled is evidenced by Professor Barry's recent work, in which he records this pulsation by an optical method.

In consideration of the significance of venous pulse records due attention must be given to the experimental evidence brought forward by those who are engaged in the investigation, by modern methods, of the true time relationship of the various events in these records. Dr. Sainsbury appeals to those teaching to look into this matter with an open mind, and I feel certain his views will receive full consideration.—I am, etc.,

Belfast, April 20th. J. E. MACILWAINE.

TREATMENT OF DIABETES BY RAW FRESH GLAND (PANCREAS).

SIR,—In a recent communication to the BRITISH MEDICAL JOURNAL (March 14th, p. 503) Dr. T. J. Hollins stated that when a patient with diabetes mellitus was given raw pancreas by mouth the sugar disappeared from the urine, and, further, that this line of treatment did not cause any symptoms of overdosage. Dr. W. Dunn (April 4th, p. 680) stated that he had had good results on one patient, but Dr. G. A. Harrison (April 18th, p. 760) failed to confirm these observations on two patients, who had been under treatment for some time. This subject is of importance, since a patient would much rather take a medicine by mouth than have it injected every day. An attempt was therefore made to confirm Dr. Hollins's work.

The patient, a girl aged 14, had been under treatment for the past two years, but her sugar tolerance had decreased, chiefly owing to the unsatisfactory conditions in the home. The dose of insulin was increased rapidly from 5 units to 12 units in the morning and another 8 units at night. After three weeks the blood sugar at 10 a.m., before the insulin injection, was normal, and the dose of insulin was reduced to 8 units in the morning and 6 units at night, owing to some slight symptoms of hypoglycaemia. The blood sugar for three days before the experiment varied from 0.12 to 0.14 per cent. The diet was kept constant at sugar

16 grams, protein 82 grams, fat 134 grams, caloric value 1,600. Weight of patient, 68 lb. The pancreas was supplied by the British Drug Houses, Ltd., and I wish to thank them for their courtesy in sending it. It was kept in an ice-chest, since insulin is not destroyed under these conditions. One ounce was eaten at 10 a.m. each day with salad, and the girl did not object to it.

	Blood Sugar. 10 a.m.	4 p.m.
April 2nd	0.125 per cent.	0.14 per cent.
,, 3rd	0.15 ,,	0.21 ,,
,, 4th	0.215 ,,	0.225 ,,

Sugar appeared in the urine on the afternoon of the second day and was present in every specimen passed on the third day. The experiment was then stopped and insulin given for the next two days. Since the frozen raw pancreas had failed to maintain the blood sugar within normal limits, it was conceivable that some change had taken place as the result of the freezing. The pancreas was therefore sent direct from the slaughterhouse (packed in a little ice) and was given to the patient as soon as it arrived. This was a little inconvenient as the time of arrival varied from 1 p.m. to 4 p.m.

On the first two days 2 oz. were given and 4 oz. on the third day.

	Blood Sugar. 10 a.m.	4 p.m.
April 6th	0.14 per cent.	0.13 per cent.
,, 7th	0.175 ,,	0.19 ,,
,, 8th	0.18 ,,	0.215 ,,

Sugar appeared in the urine on the afternoon of April 7th, but was absent on the morning of the third day, although in the whole twenty-four hours 12 grams of sugar were excreted. In order to complete the experiment insulin was given for the next few days, and in the following three days neither insulin nor raw pancreas was given, so as to demonstrate the effect of the pancreas.

	Blood Sugar. 10 a.m.	4 p.m.
April 14th	0.115 per cent.	0.12 per cent.
,, 15th	0.145 ,,	0.145 ,,
,, 16th	0.14 ,,	0.15 ,,
,, 17th	0.16 ,,	
Insulin started.		
April 18th	0.115 per cent.	

The experiments on this patient, together with those reported by Dr. Harrison, seem to show quite clearly that raw pancreas, when eaten, does not have any effect in lowering the blood sugar of the patient who requires insulin to maintain it at the normal level. In this case, the amount of insulin required was only 14 units, but in both experiments the blood sugar began to rise about twenty-four hours after the insulin had been stopped. When neither pancreas nor insulin was given, the blood sugar did not rise as high as when the pancreas was given, but this may be due to the extra food, which was eaten in the form of pancreas, since no reduction was made in the other constituents of the diet.

These experiments do not hold out any hope that raw pancreas can be of any assistance to the patient with true diabetes mellitus who needs insulin.—I am, etc.,

London, W.1, April 25th. GEORGE GRAHAM.

SIR,—Dr. G. A. Harrison in his letter (April 18th, p. 760) twice mentions that "the dose of insulin remained constant." Dr. Hollins (March 14th, p. 503), Dr. Young (March 28th, p. 632), and also Dr. Dunn (April 4th, p. 680), all three explicitly state that no insulin was being used. What becomes of Dr. Harrison's argument?—I am, etc.,

EDWARD B. FFENNELL, M.D.

Hayle, Cornwall, April 24th.

INFLUENZAL MYOCARDITIS.

SIR,—During the recent influenzal outbreak I was struck by the fact that in almost every case, although the attack itself was often very mild, the convalescence was prolonged, and characterized by symptoms and signs which pointed to invasion of the myocardium by the toxin and the production of incapacity for work for an average period of four to six weeks in many cases.

The typical history given by patients was that the attack was so slight that they did not think it necessary to consult a doctor, but, following the attack, they were seized with giddiness, faintness, breathlessness, and exhaustion. An examination of the heart revealed a somewhat rapid pulse, 80 to 90, of low tension, and irregular, and in the majority of cases there was a definite displacement of the apex beat 1/2 in. to 1 in. outwards, showing slight dilatation. Auscultation generally revealed a tic-tac rhythm, and occasionally a systolic murmur developed at the apex, but disappeared when the apex travelled in again, and the symptoms of cardiac insufficiency disappeared. Some cases were characterized by bouts of simple tachycardia and trembling of the limbs, the patient comparing his sensations to the staggering gait of a drunken person. The complexion in the majority of cases was sallow and the eyes sunken, and the cardiac symptoms were accompanied by a loss of flesh and anorexia. The symptoms generally took two months to disappear completely, and in cases of pre-existing heart trouble a longer period was required.

I find that the administration of salicin in 20-grain doses every two hours for the first twelve hours and then every three hours for the next twelve hours, as advised by E. B. Turner, has a valuable effect in protecting the heart, and should be given with the regularity of salicylates in acute rheumatism.—I am, etc.,

Stafford, April 25th. C. JOYNER, M.A., M.B., Ch.B.

SLOW HEART.

SIR,—The *Observer* for April 26th, in a long article by a special correspondent on Nurmi, "the world's greatest athlete," mentions that "Nurmi's heart, even under stress, beats only 44 to 49 times to the minute." The article also recalls that at Stockholm, on August 23rd, 1923, Nurmi set up a new world's record for the mile of 4 min. 10⅖ sec., and that at the Paris Olympiad last year he won the 1,500 metres, 5,000 metres, 3,000 metres team race, and the 10,000 metres cross-country race. As many of your readers will know, Nurmi is still astonishing the athletic world. But it is the mention of his heart rate (44 to 49) which prompts this letter, particularly as a week ago I saw a lady, aged 30 years, whose pulse was 27 and next day 28 to the minute. She was not complaining of her health, and I had only felt her pulse because, when I said the pulse of her son, whom I was attending, was slow (50) she said it might be a family complaint.

In a long experience I can remember only one case of such very slow pulse unassociated with complaint of ill health, and that was one of a gentleman who died in his 80th year. His pulse, when he considered himself feeling well, used to be 28 a minute. He had the slow pulse during the last fourteen years of his life—I did not know him before—although during the greater part of that time he was active and took considerable walking exercise. Six months before he died he developed marked Cheyne-Stokes respiration, which he had for a week or more, but recovered, and was up again for several months.

I think that some of your readers may be interested in these details. I should be glad to hear the opinions of others on this subject, as I regret I am unable fully to explain the condition myself.—I am, etc.,

London, W.14, April 26th. RICKARD W. LLOYD.

THE TREATMENT OF INFANTILE PARALYSIS.

SIR,—I have read with much interest the various letters that have recently appeared in the JOURNAL on re-education treatment for infantile paralysis. I must, however, point out that Mr. P. B. Roth is not quite right in his letter (April 4th, p. 681) when he states that priority of the methods is to be given to his grandfather, Dr. M. Roth, who published a book on the treatment of paralysis in infancy during 1869. While in no way wishing to detract from the good work done by Dr. M. Roth, in justice it must be stated that his methods were essentially those of the Ling school, who had been treating various forms of paralysis, including infantile paralysis, for many years previously. A case of the disease in question treated by re-education can be found described in the *Archiv für pathologische Anatomie*, 1859, xvi, pp. 177-191, by Dr. M. Eulenburg.—I am, etc.,

London, W.1, April 26th. EDGAR F. CYRIAX.

INDIVIDUAL MEDICAL DEFENCE.

SIR,—In your issue of April 25th (p. 806) Dr. Henry Robinson writes at some length criticizing the suggestions for individual medical defence made by the Council of the Association in its Annual Report (paras. 50-58) and summarized in its recommendation to the Representative Body.

Those who are in doubt as to whether the Association should undertake this work should study Dr. Robinson's letter, for they will find therein many arguments which will readily convince them of the Council's wisdom. He says: "Forty-five years ago the scheme would have been a benefit to the profession." That would have been in 1880—many years before any of the defence societies had started on their successful and prosperous careers leading to the accumulation of large reserve funds. In spite of the existence of three defence societies with large reserve funds, I cannot see how he can assert that what would have been right in 1880 is wrong in 1925, seeing there are a very large number of practitioners still without medical defence. If the existence of three defence societies in 1925 makes all the difference, the addition of a fourth would still be in the right direction, especially as he predicts that the fourth will be eventually outside the control of the Association. One cannot have too much of a good thing. For then there would be four offices (I include the Scottish Defence Society), four councils, four paid secretaries, four auditors, four advertisement accounts, and all to be paid for by the struggling practitioner, who would be privileged by the protection afforded by "managers highly experienced in the work of individual defence."

Dr. Henry Robinson is one of these managers: he is a member of the council of the Medical Defence Union. As such one would have thought that he would have been more conversant with the history of individual defence than to assert, "When these societies came into existence many years ago, there was, I gather, no desire on the part of the British Medical Association to undertake individual medical defence." As a matter of history (too long to detail here) it was the desire of the members of the Association to start individual defence, but they were always hampered in their efforts by the legal constitution of the Association. I have no doubt (although I have no evidence at hand to prove this) that it was those very members of the Association who desired it to undertake individual defence who founded the present-day defence societies. In a sense these are bud sports of the parent body, not a new or distinct species of organization.

Dr. Robinson's criticism of the Council's recommendation to the Representative Body is full of possibilities that are not likely to happen. The suggested separate organization in close relation to the Association, to carry on individual defence, seems to be quite feasible, and I have no doubt that the legal experts in company law can make the separate organization in such close relation to the Association as to be virtually under its control. When well established it may be possible to alter the Memorandum of Association so as to make the new society part and parcel of the Association. In any case, whether or no, this is the day of associated companies and amalgamations.

As regards finance, it is quite true, as Dr. Robinson states, that the Association funds cannot be used to support the "company"; but he admits that the present companies for defence started from zero, and are now wealthy companies with large reserve funds. Why cannot the proposed "company" have equal success, especially as it will commence its career equipped with a self-starter in the shape of the British Medical Association, which will help it to get off from the zero mark with great celerity?

Dr. Robinson makes a great point that the British Medical Association must disclose to the newly qualified innocents that the new company has no reserve funds, while the older companies "have funds running into thousands of pounds." I quite agree with him, and I think the Association should go further, and tell the newly qualified how profitable the business is, and the number of thousands these companies have in reserve. Probably these amount to about £60,000 to £70,000, and their combined annual income cannot be less than £20,000. The Association should also inform the newly qualified that, taking the Medical Defence Union as an example, it paid to the Yorkshire Insurance Company in 1922 £1,280 3s. 9d. to insure its 9,375 members. This works out at 2s. 9d. a head.

If the new "company" is started and is well supported from the first (though I believe it will take some time to get 6,500 members), there is no reason why funds should not accumulate as they have done in the older societies. When the funds reach the maximum needed for safe cover, then either the premium can be reduced or the surplus money can be used for the benevolent purposes of the Association, or otherwise as the proper authority may direct.

The new "company" will have a great advantage over the older companies in that it will be able to have office accommodation in the Association's new house in Tavistock Square. This, no doubt, would be let free or at a nominal rental. By this convenience, and by close relationship with the Association and its staff, overhead and establishment charges could be kept low.

Dr. Robinson states that there is extraordinarily little dissatisfaction among 20,000 odd members of the defence societies, by whom, directly or indirectly, the entire councils are elected. This only goes to show that there is very little happening in connexion with the defence societies. As a matter of experience I find that men pay their annual premium and very soon forget the name of the company they are insured with. This indifference will be changed to active interest when they insure with the British Medical Association company.

One real difficulty about the defence question Dr. Robinson does not touch upon. That difficulty concerns breaches of professional conduct and practice such as might be brought before the General Medical Council. I should like to ask Dr. Robinson, as an experienced manager and member of council of the Medical Defence Union, whether his company would prosecute a member of his company before the General Medical Council for advertising, touting, or other grave professional offence affecting the honour of the profession. The question of the self-discipline of the profession must be considered in its relation to individual defence against charges made by the laity. Personally, I think this duty will be discharged better by a strong British Medical Association society than by a number of other societies all competing for members.—I am, etc.,

Warrington, April 26th. J. S. MANSON.

THE ROYAL ARMY MEDICAL CORPS.

SIR,—In the SUPPLEMENT to the JOURNAL, January 3rd, 1925 (p. 10), is a note of the proceedings of the Naval and Military Committee of the British Medical Association. Sir Richard Luce said that the position of the R.A.M.C. was becoming worse owing to the shortage of candidates. Seniors were doing the work of juniors. There was a block in promotion. A higher rate of commencing pay should be offered. Sir William Macpherson thought that the Association should use its influence with medical schools to encourage entrance to the R.A.M.C.

In the JOURNAL of April 11th (p. 709) your article upon the pensions of R.A.M.C. officers makes very clear the financial position. It is well worth study by those who contemplate joining the corps. It is well that candidates should realize what has always been understood—namely, that no contract made by the War Office with officers will hold good for a single day if the War Office thinks fit to repudiate it.

During the years 1878 and 1879 there was similar difficulty in obtaining candidates. I am a Bart's man, and I well remember the surprise and regret of the late Sir Norman Moore, then our dean, when I expressed my intention of joining the Army Medical Service. The Royal Warrant of 1879 was seemingly very attractive. It gave newly joined officers £1 per diem, *plus* allowances that came to about £90 yearly, say in all some £450 per annum. But within a year the majority of those who sat for examination in 1879 (including Sir Alfred Keogh, myself, and some eighty others) were sent to India, where we found our pay and allowances included came to a total of only £317 per

annum. No young officer—or candidate—reads a Warrant with much understanding. We had not noticed a simple sentence that this Warrant did not apply to India, or considered exactly what it meant. However, we knew later. The position had been camouflaged, and we were caught in the toils of the hunter.

Sir William Macpherson's idea is beautiful and simple. The War Office is short by, I believe, some sixty officers, and not only the twenty asked for, and these sixty officers' work is thrust upon others. Surely the medical schools might well come forward and allay the discontent! I am reminded of a similar suggestion made a few years ago, when the I.M.S. were being broken on the wheel. This was that the R.A.M.C. should amalgamate with them. One can imagine the Adjutant-General, now the real chief of the Army Medical Service, smiling to himself ironically, and devising fresh forms of birdlime.

The R.A.M.C. rests upon too slender a basis at present. The corps has three pressing needs:

1. The D.G. should be upon the Army Council, where he can plainly and personally express the disabilities of his service and also set forth the needs of the army itself, in a way that no Adjutant-General is, or ever will be, capable of doing.

2. The financial contract should be regarded as inviolable, with this addendum that when a new Royal Warrant is promulgated all serving officers should have the option of transfer to the new terms if they prefer them.

3. Directors-General should be chosen from those senior and experienced officers who have borne the heat and toil of long service, whose right and claim it is to occupy the position, and who know the army from top to bottom. But possibly the War Office does not desire that the D.G. should know too much. A hard man with wide experience is a difficult nut to crack.

My experience and observation—extended now to forty-five years—is that the army has been splendidly served by my old corps, and by the medical profession, during the late war; and it is not too much to say that without the highly trained officers of the present day the British Army would fall to pieces. I will not argue this point, but those who know the multifarious duties of the Royal Army Medical Corps are well aware that it is so. And those who understand the constitution and the lines of thought in the army also know that the three points I have specially dealt with are essential in order that the corps may perform its external duties efficiently, while internally the officers of all ranks are satisfied and contented. It is not enough to flatter and make much of the corps in the strenuous days of war and to ignore obvious needs in times of peace.

I fear I cannot entirely agree with Sir Richard Luce and his committee that a high rate of pay upon joining should be offered. This makes it too easy for the subaltern to marry, and he is thus dissociated from regimental life and discipline, which is so different from that of the medical student. In my opinion the newcomer, if married, rarely becomes as efficient an officer of the army as does one who has served some six to ten years intimately appreciating the ideas current in a regiment, and incidentally learning something of his own character. Far better is it for an officer to know that his future prospects and financial position are guarded and guaranteed when eventually he takes the step against which *Punch* warned all men long ago.

I have touched upon salient points in the merest outline. All are capable of expansion in argument. But I should like to add that just as it always was, and always will be, the duty of every senior officer on the active list to uphold and support his juniors, as does every regimental colonel, so also when an officer retires he should endeavour to act upon the same principle and should press the adoption of measures that will consolidate the position of the corps. And I urge that this is also a national duty, perhaps the only one that such an officer is able to assist in.

Sir Richard Luce's committee has thus carried out loyal and valuable service in addressing the War Office. It would be interesting to see the full memorandum in print, and the reply.—I am, etc.,

Junior United Service Club, April 20th.

T. M. CORKER, Major-General.

MEDICAL MEMENTOES.

SIR,—With this I send you a pamphlet describing the contents of a unique cabinet of medical mementoes of five persons of supreme influence on medicine: Benjamin Rush, Edward Jenner, Joseph Lister, Louis Pasteur, Mme Marie Curie, two of them, Pasteur and Mme Curie, not being doctors.

This cabinet of memorabilia was a gift from Dr. Robert Abbe of New York to the College of Physicians of Philadelphia, which was founded in 1787, and is the oldest medical body in America. Our new building is fireproof and our library is only excelled in America by that of the Surgeon-General of the United States Army in Washington.

Dr. Abbe appointed Dr. S. Weir Mitchell the first custodian; he passed it on to Dr. Simon Flexner of New York, he to Dr. William H. Welch of Baltimore, and he in 1924, to myself. I have filed with the College of Physicians the name of my successor, in a sealed envelope.

The contents of the cabinet are the shoe buckles and watch of Rush; the inkstand used by Jenner, and a lock of his hair; a case of instruments used by Lister, and the test tubes of sterilized milk, now evaporated to dryness but which, though exposed to the air, never underwent putrefaction in many years; the pasteboard model of a crystal of tartaric acid, made, labelled, and used in his lectures by Pasteur—the gift of Dr. Calmette of the Pasteur Institute; and finally, the instrument used by Professor Pierre Curie and Mme Curie, in their earliest investigations of radium, just after her discovery of radium, and presented by Mme Curie herself. This will give a good idea of the character of the contents of this unique cabinet.

There are three pre-eminent names not yet represented in this collection, and I am in diligent search of some object touched or used by them—if any such objects can be found: William Harvey in England, and Vesalius and Ambroise Paré on the Continent. If by any possibility any of your readers, British or Continental, can give me any information leading to obtaining such objects, I shall be infinitely obliged.—I am, etc.,

W. W. KEEN, M.D., Hon. F.R.C.S. (Eng., Edin., and Ire.)

1520, Spruce Street, Philadelphia, April 13th.

*** The well printed pamphlet forwarded by Dr. Keen with its beautiful illustrations, is in itself a medical memento of considerable interest. We wish him good fortune in his pious quest.

Obituary.

SIR ARTHUR WILLIAM MAY, K.C.B., F.R.C.S.,

Surgeon Vice-Admiral, R.N.(ret.); late Medical Director-General Medical Department of the Navy; Honorary Physician to the King.

WE announced briefly in our last issue the death, on April 20th, of Surgeon Vice-Admiral Sir Arthur May at his Cornish home, where he had lived since retiring from the post of Medical Director-General R.N.

Arthur William May was born on June 18th, 1854; his father was the Rev. H. T. May, Fellow of New College, Oxford. From Sherborne School he went to King's College Hospital, London, and obtained the diplomas of M.R.C.S. in 1876 and L.R.C.P. in 1877. In 1914 he was elected a Fellow of the Royal College of Surgeons of England.

He entered the Royal Naval Medical Service in 1878; he served during the Egyptian war of 1882 in H.M.S. *Achilles*, receiving the medal and the Khedive's bronze star. Two years later he took part in the Suakin expedition and the Nile expedition for the relief of General Gordon at Khartoum, and was mentioned in dispatches for his attention to wounded under fire. He was promoted staff surgeon in 1890, and fleet surgeon in 1898. From 1901 to 1904 he was principal medical officer in H.M.S. *Britannia*, and from 1905 to 1909 he served as deputy director-general of the medical department of the navy. After serving as medical officer in charge of the Royal Naval Hospital, Chatham, he

was appointed in May, 1913, to succeed Sir James Porter at the Admiralty as medical director-general, with the rank of surgeon vice-admiral. Thus he was head of the Royal Naval Medical Service at the outbreak of war, and remained in charge of the department until his retirement in June, 1917. He received the C.B. in 1911 and was promoted K.C.B. in 1914.

For the following appreciation we are indebted to Sir HUMPHRY ROLLESTON, Bt., K.C.B., P.R.C.P., consulting physician to the Royal Navy:

Surgeon Vice-Admiral Sir Arthur William May, K.C.B., K.H.P., had a distinguished war service, and in 1913, after being deputy director-general of the medical department of the Admiralty, and then medical officer in charge of the Royal Naval Hospital, Chatham, he succeeded Sir James Porter as director-general, and so was responsible for the Naval Medical Service during the war until June, 1917. His term of office then came to an end, and, though not to continue his unsparing labours until the armistice must have been a disappointment, no outward sign of this was allowed to appear. His services were great, and have hardly received their due recognition, partly, no doubt, because of the relatively small personnel of the navy as compared with that of the army. The good bill of health of the navy owes much to his constant supervision; he was, of course, responsible for the very prompt and considerable expansion of the Naval Medical Service by the enrolment of temporary surgeons R.N. and the calling up of surgeons R.N.V.R., as well as for the commissioning of hospital ships and other emergency measures. A far-seeing man, he was anxious to do all he could for the good of his service by taking outside advice, and gave most loyal support to the civilian consultants. When cerebro-spinal fever broke out early in 1915 he took great trouble in formulating measures to obviate its spread, and continued to supervise the Admiralty orders, and, as new knowledge was obtained, modified them accordingly. Most conscientious, hard-working, and rather highly strung, he suffered in health from inability to save himself labour by delegating work and in other legitimate ways. With such a high standard he naturally expected much from his subordinates, and thus had the reputation of being rather a stern master. When I was his subordinate he was always most considerate and kind. After his retirement he lived at Tremeer, St. Tudy, Cornwall, and was extremely energetic in organizing Red Cross and other activities, as well as being deputy lieutenant and justice of the peace for the county. An athlete in his younger days, and always a keen sportsman, it must have been a sad trial to be laid aside by a hemiplegic attack a year ago.

Sir JAMES PORTER, K.C.B., K.C.M.G., Sir Arthur May's predecessor in the office of Medical Director-General R.N., sends us the following tribute:

I have been asked to write a brief personal appreciation of Sir Arthur May. I knew him well. In our days of active service our personal experiences of each other were wellnigh unique. When I was M.D.G. he served under me as D.M.D.G. When the great war came and I was recalled to service I served for over three years under him. Although in many ways we were men with a different outlook on life, yet we were always at one when vital service interests were at stake, in spite of the possible points of contact being numerous and not infrequently cropping up. During these long years of intimate official relations no angry word ever passed between us. I endorse all that Sir Humphry Rolleston has so well expressed. Sir Arthur outworked his strength, and so eventually by his own act and deed he compassed his end. His ardent nature and deep sense of duty led him to follow too far the specious maxim, "If you want a thing well done you should do it yourself, you should not leave it to others." Devoted to his profession, his knowledge of it was profound, extensive, and always kept abreast of the times. On entry to the Navy he obtained first place in his batch, and from that moment he never looked back. As M.D.G. his delight was to enter and encourage young surgeons of the best stamp, only the best being good enough for our invaluable seamen. For the "dry rot" which has so disastrously attacked the medical service since May left in 1917 he can be held in no way responsible. Never a seeker of popularity, it is true he did not "suffer fools gladly." Towards the end of his active service, ill health increased the difficulties of a position which, if properly maintained, cannot be free from troubles. Sir Arthur May was an upright man, straight in all his dealings. His King and country never had a more faithful or devoted servant. Official honours are notoriously not exactly showered upon naval medical officers. Hence, presumably, it happened that neither May's gallant conduct in the *Sofia* before Khartoum in January, 1885, nor his hard administrative labours during the first three years of the great war received any recognition. No matter—"The prize he sought and won was the crown for duty done."

ROBERT J. M. BUCHANAN, M.D., F.R.C.P.,

Consulting Physician, Royal Infirmary, Liverpool; late Professor of Forensic Medicine, University of Liverpool.

THE death of Dr. R. J. M. Buchanan, which we announced in our last issue, came as a great shock to his numerous friends and patients in the city of Liverpool, and regret was universally felt at the sad loss the profession has sustained. He was taken suddenly ill with pneumonia, and passed away, within a week, on April 19th.

Dr. Buchanan's life is a striking example of consistent diligence and perseverance in surmounting difficulties and finally attaining an honoured position in his profession. As a medical student he had a distinguished record. He obtained the M.R.C.S., L.R.C.P. diplomas, and the M.B., Ch.B. degrees in 1888 with honours in systematic and clinical medicine at the Victoria University of Manchester, to which the University College of Liverpool at that time was affiliated. The following year he became M.D. and received the gold medal for his thesis. In 1897 he became M.R.C.P.Lond., and in 1908 was elected a Fellow. A strenuous worker and painstaking clinician, Dr. Buchanan, early in his career, was appointed physician to the Stanley Hospital. He also held the post of honorary physician to the Hospital for Consumption and Diseases of the Chest. Pathology was a great source of inspiration in his clinical work, and he held the post of assistant pathologist in the University, where his demonstrations were much sought after by the students, who appreciated the untiring efforts of their teacher. It was a natural consequence that Dr. Buchanan should pass on to the staff of the Royal Infirmary, where he became first assistant physician and then full physician. His retirement only last December was due to the age limit, and he was elected as honorary consulting physician.

Dr. Buchanan was an able and methodic teacher; many medical students now practitioners will call to mind affectionate memories of the man and his manner. In the University he occupied the chair of forensic medicine, which he only recently relinquished. His lectures were lucid and practical, and these were made interesting, and even entertaining, by his innate ability in word-painting. His textbook of forensic medicine and toxicology was essentially practical, and furnished without over-elaboration the information in medico-legal subjects the general practitioner should possess. As a member of the Liverpool Medical Institution he held various offices, and was a vice-president in 1914. As a speaker he was brief and to the point, and in discussions he was wont to emphasize some view that might not have occurred to others. His papers on rabies and hydrophobia, on blood in health and disease, revealed much careful research, and set forth his views in no uncertain language. He was ever ready to avail himself of the most recent advances in pathology, and especially its bearing on therapeutics. Toxaemic conditions loomed largely in his outlook on disease, and he may at times have been induced to lay too much stress on these in the application of therapeutic measures.

In the great war Dr. Buchanan served as captain, R.A.M.C., and was on the staff of the 1st General Western Hospital at Fazakerley. He took great interest in the production of gas in chemical warfare and was in

frequent communication with the authorities on this subject. Some five years ago he lost his elder son after a long, lingering illness. The young man had been through the war, and was a medical student when he died. This was a great blow to his father; indeed, Dr. Buchanan was not the same man, and there is no doubt that his health suffered in consequence of his great grief.

Dr. Buchanan was a man of many parts. He was an artist of no mean order, and chiefly excelled in landscape painting. Many of his pictures have been hung in the local exhibitions. A good teller of stories, his company was ever welcome, and laughter was a frequent announcer that he was present and that he was the cause of it. He was fond of angling and enjoyed the solitude this recreation brings with it. He loved music and was fond of translating his auditory impressions into visual ones: he would describe a Wagnerian masterpiece in tones of colour. He was a lovable man; his artistic temperament readily responded to his surroundings; to strangers he might appear to be somewhat gauche, but once this impression passed the intellectual ability of the man stood out distinctly, and his fellow practitioners recognized his professional worth.

A memorial service was held in the Lady Chapel of Liverpool Cathedral on April 23rd, when many of his professional brethren and friends attended to pay their last respects to a man whom they will ever hold in affectionate remembrance. Dr. Buchanan leaves a widow and a younger son, with whom sincere sympathy is felt in the loss of one who had earned the affectionate regard of so many with whom he came into contact.

JAMES DON, M.D., C.M.ABERD.,

Senior Surgeon, Newcastle-on-Tyne Throat and Ear Hospital.

ON April 23rd the medical profession in Newcastle and the North of England learnt with deep regret and sorrow of the death of their colleague Dr. James Don, at the age of 61. It appears that he was infected by a patient who coughed in his face during a consultation; he developed phlegmonous pharyngitis, from which he died.

James Don was a native of Aberdeenshire, and studied medicine at the University of Aberdeen, graduating M.B. and C.M. in 1888, and proceeding M.D. with honours in 1890. He went to Newcastle-on-Tyne in 1892, and remained in general practice there until four years ago, when he devoted himself entirely to throat and ear work. He was surgeon to the Newcastle Throat and Ear Hospital for thirty years, and senior surgeon at the time of his death. He was also aural surgeon to the War Pensions Hospital, Castle Leazes, near Newcastle.

Dr. Don was for many years a whole-hearted worker for the British Medical Association in the interests of his brother practitioners. He became a member of the Newcastle Division soon after beginning practice there, and was chairman of the Division in 1912 and 1924, deputy representative from 1913 to 1916, and representative from 1917 to 1921; for the past thirteen years he had been a member of the North of England Branch Council; he was honorary secretary of the Branch from 1915 to 1924, and at the time of his death was president-elect. He had been a member of the Central Council of the Association since 1920, and of the Central Ethical Committee since 1921. The Annual Meeting at Aberdeen, in the week before the outbreak of war, was a great pleasure to him, for he delighted in conducting fellow representatives round his Alma Mater. He was a member of the Arrangements Committee for the successful Annual Meeting at Newcastle in 1921, and served as vice-president of the Section of Oto-Rhino-Laryngology. This brief outline of the offices held by Dr. Don in the British Medical Association does not, however, complete the record of his services to the profession. He had worked hard as chairman of the local Division during the critical time when the National Insurance Bill was before Parliament; when the provisional local Panel Committee was formed he was elected its chairman; and in later years he continued to serve on the Newcastle-on-Tyne Panel Committee. Throughout the war he performed the duties of secretary of the Local Medical War Committee without friction, and served as surgeon to the Pendower V.A.D. Hospital. At the time of his death he was vice-chairman of the Newcastle Medical Institute and an active member of the Newcastle and Northern Counties Medical Society.

A colleague and friend, to whom we are indebted for the particulars given above, writes:

"James Don spoke ill of no one and had a charitable outlook on life. He was very cautious, and sometimes it took a good deal of trouble to convince him, but once convinced of the rightness of a course he was an ardent and loyal supporter. I have seldom known a death cause such consternation and universal regret. He was a fine man, and he will be sadly missed."

The funeral was a most striking testimony to the regard in which Dr. Don was held; it was attended by many influential people of all classes and very largely by representatives of the profession all round Newcastle. The Council of the British Medical Association was represented by its Chairman, Dr. R. A. Bolam.

REGINALD DUDFIELD, O.B.E., M.A.CANTAB., M.B., D.P.H.,

Medical Officer of Health, Paddington.

WE greatly regret to have to record the death, in London on April 19th, of Dr. Reginald Dudfield, medical officer of health for the metropolitan borough of Paddington. He had occupied that position for over thirty years, partly indeed in the days of the vestry before the borough was created. Dr. Dudfield was an outstanding figure in the ranks of those whose life is devoted to the promotion of public health and the prevention of disease. He was a thoroughly competent business man who carried out efficiently every responsibility he undertook. His father before him, Dr. Orme Dudfield, occupied a similar position for the borough of Kensington, and was a man of the same high standing. Dr. Reginald Dudfield, after a successful university career and a period of office as medical officer of health for Eastbourne, was appointed to Paddington, but his energies were by no means confined to the direct service of his local authority. He was a vice-president and honorary foreign secretary of the Royal Statistical Society, and at the time of his death had been for some years honorary secretary to the Section of Epidemiology of the Royal Society of Medicine. He had also been president of the Harveian Society. His work included valuable service during the war, in connexion with which his name was mentioned in dispatches. His literary labours included a period of editorship of *Public Health*, and he was the author of a history of the Society of Medical Officers of Health. He gave much attention to the value of statistical data, and he contributed to the *Journal of the Royal Statistical Society* an important article on the methods of recording and publishing statistics. During the existence of the Vaccination League, which was established under the secretaryship of the late Mrs. Garrett Anderson, he took a prominent part in the efforts then made to have primary vaccination and revaccination placed on the same legal basis, as being equally important in the protection of the public against small-pox. At the time of his death he was 64 years of age, and had been looking forward to retirement from office to afford him a period of leisure during which he could work up some of the material, especially statistical, which pressure of official duty had prevented him from completing. It is a melancholy coincidence that just a year ago Dr. Richard Reece died suddenly at about the same time of life, and so was cut off also from the realization of a leisured retirement. The two were colleagues in the same Section of the Royal Society of Medicine—the latter as president, the other as secretary. Dr. Dudfield's death occurred some days after an operation for appendicitis.

A funeral service took place on April 21st at St. Mary's Church, Paddington Green, close to the Town Hall in which Dr. Dudfield had for so many years done his daily work. The attendance, both in numbers and composition, indicated the high esteem in which he had been held by his council and colleagues. After the service cremation

was carried out at Golders Green. The greatest sympathy is felt for his widow and family by all who had any knowledge of the part Dr. Dudfield took, not only in the administration of Paddington, but in the general advancement of public health.

ARTHUR JOSEPH EAGLETON, M.D., M.R.C.P.

THE many friends of Dr. Arthur Joseph Eagleton will regret to hear of his death recently at Newark, U.S.A., at the early age of 34.

Dr. Eagleton went from Rugby to Guy's Hospital. He became pathological assistant to the surgical registrar in 1913, and was awarded the Golding-Bird gold medal for bacteriology. While holding a house appointment he volunteered on the first day of the war, and received a commission a few days later, when he went to France. He became bacteriologist to the 3rd General Hospital (B.E.F.), and was also in the 15th Field Ambulance. Later he became a cerebro-spinal fever specialist in one area of England, and published an article on the occurrence of meningococci in the air of army huts. After the war he took charge of the bacteriological department of the Wellcome Physiological Research Laboratories, where he remained until 1923, when, finding it necessary to avoid the winter in England, he went as bacteriologist to the Eye and Ear Hospital at Newark, U.S.A. Prior to his departure he had been secretary to the Pathological Section of the Royal Society of Medicine. He published several papers giving the results of his careful investigations into methods of standardization of tuberculin, on the Schick test and active immunization against diphtheria, and into the virulence of diphtheria bacilli. A colleague writes: "His work, particularly in connexion with the standardization of tuberculin and the virulence of diphtheria bacilli, had already placed him amongst the most promising of the younger group of pathologists. In America he had commenced a lengthy series of well planned observations and experiments on the diagnosis and treatment of ophthalmic tuberculous conditions and on protein sensitization, and had carried the investigation far, despite the handicap of ill health. His premature death deprives pathology of a keen worker of careful judgement, who promised to make further contributions of great value to bacteriology. His unselfish kindliness, sincerity, and his high personal ideals gained him the affectionate regard of his colleagues and of those who worked under him. He will be missed by a large circle of friends."

THE LATE SIR RICKMAN GODLEE.

THE funeral of Sir Rickman Godlee at Whitchurch, Oxon, was attended by Sir John Bland-Sutton, President of the Royal College of Surgeons; Sir John Rose Bradford, Professor W. F. Oliver, Professor R. W. Chambers, and Professor G. Elliot Smith, representing the University of London and University College; Sir George Blacker, representing University College Hospital and Medical School; Sir George Newman (Ministry of Health), and Mr. F. G. Hallett, representing the Conjoint Board of the Royal Colleges of Physicians and Surgeons. Lady Godlee has received a message of condolence from the King, recalling the fact that Sir Rickman Godlee had been a member of the King's Household in this and previous reigns, and expressing His Majesty's sympathy with Lady Godlee in her loss. Sir Rickman Godlee was a member of the Central Medical War Committee. He joined it in August, 1915, when it was known as the War Emergency Committee, and continued to serve until it was dissolved. He was assiduous in his attendance, and did much good work in keeping the committee in touch with the staffs of hospitals and medical schools. He also acted as chairman of one of the sections hearing appeals.

We are indebted to Mr. G. GREY TURNER of Newcastle-on-Tyne for the following note:

"The writer of your interesting obituary notice of Sir Rickman Godlee has omitted to mention his association with the American College of Surgeons. While president of our own College he crossed the Atlantic to attend the first Convocation of the new American College, which was held in the Congress Hotel in Chicago on November 12th, 1913, under the presidency of Dr. J. M. T. Finney of Baltimore. On that occasion Sir Rickman conveyed a message of greeting from our Royal College, and also delivered the first Fellowship Address. In the latter he sketched the history of surgery in England up to the formation of the College of Surgeons in 1800, and followed its destinies to the time of its incorporation as a Royal College in 1843. He also dealt with its various activities, and especially as an examining body and as the custodian of the Hunterian Museum. The tone of helpful friendship which he adopted made a great impression, and altogether his visit did much to arouse those feelings of mutual good fellowship which were before long to be cemented on the battlefields of Europe, and which were consummated, so to speak, by the gift of the 'Great Mace' to the American College from the consulting surgeons of the British armies. At this Convocation he was invested with the Honorary Fellowship of the American College, which was conferred upon him in company with Halsted of Baltimore, Keen of Philadelphia, Collins Warren of Boston, and Weir of New York, who together formed the first batch of Honorary Fellows. At the same Convocation ordinary Fellowships were granted to no fewer than 1,059 candidates. His visit will not soon be forgotten on the other side, and there are many surgeons in America who will mourn, not only the loss of a great figure, but that of a firm friend."

By the death of Dr. EVAN PRICHARD Banbury and the neighbourhood loses an able practitioner and his patients a good friend. He received his medical education at Edinburgh University, and graduated M.B., Ch.B. in 1902, proceeding M.D. in 1906. His first appointments were assistant resident medical officer to the Edinburgh City Fever Hospital, and house-surgeon to the Gloucester General Infirmary and Eye Institute. Prichard was one of those men to whom a patient's illness and troubles were his own anxiety throughout, and if a patient wanted him he could not rest until he had been to see him. His patients gratefully recognized this, for when, a little more than a year ago, he had a serious attack of streptococcal septicaemia, the bulletins on the door of his house were watched anxiously by all classes of his patients. He engaged in all branches of practice, and where he felt himself deficient he did not hesitate to say so and to seek further help. But it was as a surgeon that he did his best work; at the Horton Infirmary, Banbury, he was prepared to do, and did well, all the ordinary major operations. Nor was he deficient in that essential quality of a good surgeon, the ability to do the right thing in an emergency. In his dealings with his fellow practitioners his most lovable characteristic was his boyishness, his open heart, his cheerful and direct speech. It is with feelings of great regret that his colleagues in the Oxford Division of the British Medical Association look upon his untimely death, when much of his life's work lay in front of him. A fund has been opened to provide a memorial at the Horton Infirmary, with which Prichard had been associated since he went to Banbury in 1907. He is survived by his widow, three sons, and one daughter.

The Services.

DEATHS IN THE SERVICES.

Major-General Sir Richard William Ford, K.C.M.G., C.B., D.S.O., Army Medical Staff (retired), died at Mentone on March 31st, aged 67. He was the son of Richard William Ford, clerk of the peace, Portsmouth, and was educated at Sherborne School. After taking the M.R.C.S. in 1879, and the L.R.C.P.Ed. in 1880, he entered the army as surgeon in 1881, became colonel in 1909, and, after thirteen months on half-pay, from January 26th, 1913, to March 6th, 1914, was promoted to surgeon-general on June 1st, 1914. He had seen much active service, beginning with the Egyptian war of 1882, when he received the medal and the Khedive's bronze star. In the South African war he served from 1899 to 1901, taking part in operations in the Orange River Colony, including the ten days' operations at Paardeberg, and the actions at Poplar Grove, Driefontein, Vet River, and Zand River, also in operations in the Transvaal, and took part in the relief of Kimberley; was mentioned in dispatches in the *London Gazette* of April 16th, 1901, and received the Queen's medal with four clasps, and the D.S.O. After the war he was seconded for five years for service as deputy surgeon of the Royal Hospital, Chelsea. On promotion to major-general he became D.M.S. of the Northern Command. After the war began he was appointed D.M.S. in Egypt, holding that appointment from 1914 to 1916, when he became D.M.S. in Ireland (1916-18). He was again mentioned in dispatches in the *London Gazette* of

June 21st, 1916, and received the C.B. in 1916 and the K.C.M.G. in 1917. He was also a Knight of Grace of the Order of St. John of Jerusalem. He retired in February, 1920. In 1884 he married Mary Augusta, daughter of the late Rear-Admiral Wainwright, R.N.

Colonel James Alexander Black, Bengal Medical Service, died on March 27th at Marseilles, on board the P. and O. s.s. *Caledonia*, on his way home, aged 54. He was the eldest son of the late Rev. John Black, Professor of Humanity (Latin) at Aberdeen, and was educated in that university, where he graduated M.A. in 1890, and M.B., C.M. in 1894. He entered the I.M.S. as surgeon lieutenant in January, 1896, and, after seven years' military service, entered the chemical department as a probationer. In October, 1904, he was appointed chemical examiner to the Government of Bengal and professor of chemistry in Calcutta University, and in 1910 was transferred to the same posts in the Punjab University at Lahore. He was promoted to colonel on October 27th, 1923, when he was posted as Inspector-General of Civil Hospitals in the Central Provinces and Berar.

Brigade Surgeon Ignatius McDonogh O'Farrell, R.A.M.C.(ret.), died in Jersey on March 11th. He was born at Philadelphia on June 16th, 1837, and educated in Dublin, taking the L.R.C.S.I. and L.K.Q.C.P. in 1860, and subsequently the F.R.C.S.I. He entered the army as assistant surgeon in 1862, became brigade surgeon in 1889, and retired in 1892. For a short time he held a post on the retired list at Leicester in 1897. As a regimental medical officer he served in the 108th Foot and the Royal Artillery.

Lieut.-Colonel Alfred Fullam Weston, R.A.M.C.(ret.), died of heart failure in London on April 10th, aged 48. He was the son of Major A. Weston, late 5th Lancers: he was educated at St. George's and took the L.S.A. in 1899. He entered the R.A.M.C. as lieutenant in April, 1900, became lieutenant-colonel in December, 1917, and retired in December, 1920. He served in the recent great war.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE Regius Professor of Physic, Sir Humphry Rolleston, Bt., K.C.B., a former Fellow of the College, has been elected a Fellow of St. John's.

At a congregation held on April 24th the following medical degrees were conferred:

M.B., B.CHIR.—C. A. Horder.
B.CHIR.—G. B. Tait, K. E. Harris, C. McC. Jones.

The following candidates have been approved at the examinations indicated:

D.P.H. (*Old Regulations*): *J. A. Charles, D. C. de Fonseka, G. K. Fulton, S. M. Hattersley, H. A. Sandiford, A. J. Smyth.

* Distinguished in the principles of hygiene and in the application of sanitary science.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part I* (*Physics and Electrotechnics*): Elizabeth M. Bird, J. F. Bromley, E. H. P. Cave, Margaret R. Clark, Beatrice L. Collins, W. C. Fothergill, E. D. Gray, J. L. A. Grout, A. O. Jacob, P. H. Jhangiani, M. H. Jupe, P. J. Kerley, A. Lambadarides, C. F. Macdonald, Ethel M. Magill, P. B. Mukerji, I. S. Nalwa, J. O'Sullivan, K. A. Piper, E. J. H. Roth, N. S. Sodhi, Dulcie C. Staveley, H. McK. Strickland, C. G. Whorlow, F. E. Wynne.

Part II (*Radiology and Electrology*): E. H. P. Cave, R. V. Clayton, W. C. Fothergill, A. O. Jacob, C. F. Macdonald, C. J. K. O'Malley, †J. O'Sullivan, Dulcie C. Staveley, H. McK. Strickland, R. S. Topham, C. G. Whorlow.

† Distinction.

UNIVERSITY OF LONDON.

St. Bartholomew's Hospital.—Four lectures on chemical control of certain bodily functions will be given at St. Bartholomew's Hospital Medical College by Dr. H. H. Dale, C.B.E., F.R.S., on May 15th, 19th, 22nd, and 26th at 5 p.m.; Sir Holburt Waring will preside at the first lecture.

Charing Cross Hospital.—Dr. B. Brouwer, Professor of Neurology in the University of Amsterdam, will give a lecture on projection of the retina in the brain at Charing Cross Hospital Medical School on Friday, May 15th, at 5 p.m.

Admission to these lectures is free.

UNIVERSITY OF GLASGOW.

THE following further degrees were conferred on April 22nd:

M.D.—*J. L. Halliday, †H. M. Walker, H. C. Davies, T. D. Hunter, A. H. Stewart.

* High commendation. † Commendation.

M.B., CH.B.—The degrees of M.B., Ch.B. were conferred upon 131 candidates whose names were printed as having been successful in the Final M.B., Ch.B. examination in our issue of April 18th (p. 763). The following candidates passed with honours: R. A. Currie, M. A. Foulis, and J. A. Imrie; and the following were commended: R. N. Walker, C. M. Morton, R. G. Hutchison, C. W. Anderson, R. Ramsay, J. M. Stobo, Edna W. Bruce, P. D. Thomson, A. G. M'K. Murdoch, R. S. Hynd, and H. J. Scott.

NATIONAL UNIVERSITY OF IRELAND.

THE Senate, at its meeting on April 17th, had under consideration the reports of the examiners on the medical and dental examinations, spring, 1925, and awarded passes and honours.

The following appointments were made:—University College, Dublin: Lectureship in Chemistry, Mr. Joseph Algar, D.Sc.; Lectureships in Pathology and Bacteriology, Mr. Thomas T. O'Farrell, F.R.C.S.I., and Dr. William D. O'Kelly; Lectureship in Orthodontia, Dr. Laurence Flanagan, B.D.S.

The Senate appointed Dr. W. D. O'Kelly to represent the University at the National Conference for the Prevention of Tuberculosis to be held in London in July, and Mr. P. J. Merriman, M.A., President, University College, Cork, Pro-Vice-Chancellor of the University, to represent the University at the eleventh centenary of the Royal University of Pavia.

The following degrees and diplomas were conferred on April 20th:

M.B., B.CH., B.A.O.—J. McGrath, W. Grimley, Alice M. Lemass, E. Doherty, Norah A. Carroll, P. J. Carroll, Hanora Casey, Josephine M. B. Coghlan, Sarah M. Coghlan, A. Corr, *R. Cumberbatch, Mary K. Doherty, M. Downey, Mary Farrington, E. Fogarty, J. N. Frost, M. J. D. Griffith, G. McCarthy, Anna M. P. McGrath, E. G. Mahony, C. P. Malley, F. I. O'Doherty, Anne M. O'Dowd, E. O'Sullivan, Mary P. Power, Margaret M. Purcell, E. S. Quinlan, F. D. J. Reddin, C. P. M. Saunders, G. B. Stein.

D.P.H.—Honoria J. Doyle, T. W. Moran, *Anne Sullivan.

* *In absentid.*

LONDON INTERCOLLEGIATE SCHOLARSHIPS BOARD.

SIX medical entrance scholarships and exhibitions of an aggregate total value of £513, tenable in the Faculty of Medical Sciences of University College, and in the medical schools of University College Hospital, the London Hospital, and the London (Royal Free Hospital) School of Medicine for Women, will be offered. The examination will commence on June 30th. Full particulars and entry forms may be obtained from the secretary of the Board, Mr. S. C. Ranner, M.A., the Medical School, King's College Hospital, Denmark Hill, London, S.E.5.

Medical News.

AT a meeting of the Middlesex Hospital Medical Society to be held at the hospital on Tuesday, May 12th, at 8.15 p.m., Lord Justice Atkin, President of the Medico-Legal Society, will deliver an address entitled "Medicine and Law."

ON Friday, May 8th, at 9 p.m., Dr. H. H. Dale, F.R.S., will give an evening discourse at the Royal Institution of Great Britain on the circulation of blood in the capillary vessels.

H.R.H. PRINCE HENRY will take the chair at a dinner in aid of the Infants Hospital to be held at the Guildhall, London, on Friday, May 8th.

AT a meeting of the Röntgen Society on Tuesday next, at 8.15 p.m., at the British Institute of Radiology, Welbeck Street, W.1, Mr. C. H. Holbeach will read papers on the theory and operation of Potter-Bucky diaphragms and on the treatment of Coolidge tubes.

THE second annual congress of the Incorporated Association of Hospital Officers will be held at St. Thomas's Hospital, London, by permission of the treasurer and governors of the hospital, on Friday, May 15th, at 10 a.m. After an address of welcome by the Hon. Sir Arthur Stanley, Mr. W. H. Harper, president of the association, will open the congress, and a paper introductory to a discussion on the role of the auxiliary hospital or home of recovery in the voluntary hospital organization will be read by Dr. F. N. Kay Menzies, Director-General of Hospital and Medical Services, British Red Cross Society. At 2 p.m. Mr. A. G. E. Sanctuary will introduce a discussion on the effect of hospital savings and contributory schemes on voluntary contributions. At the morning session Viscount Hambleden will take the chair, and at the afternoon session Dr. H. L. Eason, superintendent of Guy's Hospital. The annual dinner will be held in the evening.

THE Fellowship of Medicine announces that on May 7th Sir Henry Gauvain will give a lantern lecture on heliotherapy in surgical tuberculosis, at 5.30 p.m., at 1, Wimpole Street. A two weeks' afternoon course for general practitioners at the London Temperance Hospital, from May 18th to 29th, will consist of a clinical demonstration at 4.30 p.m. each day, followed by a short lecture at 5.30. A four weeks' course in psychological medicine commences on May 4th at the Maudsley Hospital, including lectures and demonstrations on the psychoneuroses, mental deficiency, clinical psychiatry, and pathology of mental diseases, with neurological demonstrations by Sir Frederick Mott at the Camberwell Infirmary. At the Central London Throat, Nose, and Ear Hospital, from May 11th to 30th, clinical demonstrations will be given with out-patient clinics and ward rounds; an operative surgery class will also be arranged. A course will be held at the Infants Hospital from May 18th to 30th; early application is advisable as the entry is limited. An afternoon course in dermatology at the Hospital for Diseases of the Skin, Blackfriars, from May 18th to 30th, will consist of out-patient instruction and venereal clinics. Full particulars of these courses may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

MR. BASIL GRAVES, who in 1922 was appointed a British Medical Association research scholar to investigate methods of illumination of the eye for clinical examination and of microscopy of the living eye by the Gullstrand slit lamp and the eye microscope, as well as the examination of the fundus by the Gullstrand ophthalmoscope, has continued his inquiries, and was invited to open a discussion on the microscopy of the living eye at the Annual Meeting at Bradford last year (BRITISH MEDICAL JOURNAL, October 25th, p. 756). Since the beginning of this year he has been giving courses on ocular microscopy and slit-lamp illumination in the department of ophthalmology of the Graduate School of Medicine of the University of Pennsylvania, Philadelphia. He has given six such courses, each limited to six persons. A course consisted of a lecture of one hour and practice for one hour and a half daily for five days a week for two weeks. The demand was so considerable that many more courses than were originally arranged had to be given. Mr. Graves has also delivered the Rush Lecture before the College of Physicians of Philadelphia, and introduced a discussion on the slit lamp for ophthalmic surgical practice at the meeting of the Pennsylvania Section of the American College of Surgeons last March.

AT the Bedfordshire Quarter Sessions, on April 8th, the new magistrates who took the oath included Dr. A. E. Street (Cranfield) and Dr. P. T. H. Stedman (Leighton Buzzard).

DR. LLOYD W. HUGHES of Bottwnog, Pwllheli, has been returned unopposed to the Carnarvonshire County Council.

DR. A. G. TOLPUTT has been elected chairman of the Kettering Urban District Council.

THE first centenary of the foundation of the Oporto faculty of medicine will be celebrated from June 22nd to 27th.

THE next meetings of the Royal Commission on Lunacy and Mental Disorder will be held at 5, Old Palace Yard, Westminster, on Monday and Tuesday, May 4th and 5th, beginning at 10.30 a.m. each day.

A LIST of maternity and child welfare centres in England has been published by the Ministry of Health, and may be obtained from H M. Stationery Office (price 1s. 6d.). The list includes all municipal and voluntary maternity and child welfare centres known to the Ministry of Health in March, 1925, the centres being grouped in three sections: (1) London, (2) county boroughs, (3) counties, in this last case the centres being classified according to sanitary districts.

DR. CABANÈS, the well known medical historian and editor of the *Chronique médicale*, has recently received the Cross of the Legion of Honour.

THE issue of *Paris médical* for April 4th contains an illustrated review of the fifth Salon des médecins organized by Dr. Paul Rabier, whose genial personality is reproduced in a sketch by M. Tahindjis. Other exhibits of medical interest are a portrait of the late Professor Paul Ségond by Mme Fourneau-Ségond, a medallion of Claude Bernard by Professor Hayem, and a bust of Professor Léon Bernard by Mme Renée Vautier.

DR. AUGUSTE PETIT of the Institut Pasteur, who is well known for his work on spirochaetosis icterohaemorrhagica, has been elected a member of the Académie de Médecine in place of the late Dr. Jean Camus.

THE first Latin-American Congress of Medicine will be held in Paris in June, 1926, under the presidency of Professor Roger, dean of the faculty of medicine.

THE Queen of the Belgians has been presented with the gold medal of hygiene by the French Republic.

ON May 16th and 17th the first Polish Antituberculosis Congress, and on May 18th and 19th the fourth Congress of Polish Physicians and Sanitary Town Officials, will be held in Cracow. The principal subjects to be dealt with in the Antituberculosis Congress are: (*a*) clinical classification; (*b*) specific and surgical treatment; (*c*) treatment by artificial pneumothorax; (*d*) climatological and sanatorium treatment; (*e*) the importance of dispensaries; (*f*) organization in Poland of the antituberculosis campaign. The principal subjects to be considered at the Sanitary Congress are: (*a*) school hygiene; (*b*) the protection of mothers and children from the standpoint of sanitation; (*c*) the campaign against child mortality.

THE late Mr. Thomas Hamer of Tyldesley has bequeathed £1,000 to the Manchester Royal Infirmary, £500 each to the Manchester Royal Eye Hospital, the Southport Convalescent Home, the Leigh Infirmary, the Wigan Infirmary, the Bolton Infirmary, and the Devonshire Hospital, Buxton, and £250 to the Royal Manchester Children's Hospital, Pendlebury.

A NEW medical society has been founded at Amsterdam under the name of Het Amsterdamsche Geneeskundia Genootschap.

HUXLEY was born on May 4th, 1825. The issue of *Nature* for May 9th will include a special supplement, to which a number of leading authorities on biological evolution will contribute; among them are Sir E. Ray Lankester, Sir Arthur Keith, Professor MacBride, Sir W. T. Thiselton-Dyer, Sir Arthur Smith Woodward, and Professor Arthur Thomson.

THE Belgian Society of Stomatology will celebrate its twenty-fifth anniversary in July.

THE report of the First International Congress of Open-Air Schools, held in Paris, in June, 1922, which has now been published, contains an account of the various discussions and resolutions adopted, with especial relation to technical details and the general benefits of this form of education, which is rapidly gaining favour in France. The delay in publication is ascribed to the necessity for obtaining a report accurate in every detail. It is published by Messrs. Maloine of Paris at the price of 10 francs.

THE late Sir T. Clifford Allbutt, P.C., K.C.B., F.R.S., Regius Professor of Physic in the University of Cambridge, and President of the British Medical Association 1915–21, who died in February last aged 88, has left estate of the gross value of £56,963, with net personalty £50,137. He bequeathed to the Fitzwilliam Museum, Cambridge, his portrait by Sir William Orpen, R.A., and on the death of his wife a quantity of antique furniture and drawings and paintings by noted artists, including Romney, Landseer, Rossetti, Watts, and Turner. To Gonville and Caius College, Cambridge (of which he was a Fellow), he gave three silver and gilt drinking horns or cups, requesting that his name as donor should be engraved thereon. Subject to the fulfilment of personal bequests and life interests, and the failure of issue, the ultimate residue of his property is bequeathed to Gonville and Caius College for Clifford Allbutt Fellowships for medical research, or otherwise for the benefit of the college, provided that no part thereof be used for building.

Letters, Notes, and Answers.

ALL communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, 429, Strand, W.C.2.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Matter intended for the current issue should be posted so as to arrive by the first post on Monday, though in special circumstances urgent communications can usually be received on Tuesday morning.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, 429, Strand, W.C.2, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager, 429, Strand, W.C.2. Attention to this request will avoid delay.

The ***TELEPHONE NUMBER*** of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is *GERRARD 2630* (Internal Exchange).

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QUERIES AND ANSWERS.

ANOSMIA.

"G. P." asks for suggestions for treatment of a man, aged 60, with an apparently normal nose and throat, who has completely lost all sense of taste and smell for two months, following an ordinary "influenzal cold."

INCOME TAX.

Motor Car Transaction.

"W. M." bought a new car in 1912 for £580, and a second-hand car in 1924 for £450, selling the former car in January, 1925, for £30.

*** The sale early in 1925 shows that the 1924 transaction was in the nature of a replacement rather than an addition, and, in our opinion, should be treated as if it had taken place in 1924. On that basis the expense deductible from the gross earnings for 1924 is £450 – £30 = £420.

LETTERS, NOTES, ETC.

TRAUMATIC INTUSSUSCEPTION.

DR. J. W. HILLIARD (Blackpool) writes: The following case may be of interest in conjunction with that reported in the BRITISH MEDICAL JOURNAL for April 18th (p. 734) by Dr. Mitchell. In 1901, while I was house-surgeon in the Royal City of Dublin Hospital, a boy, aged about 16, was admitted, who about eight or nine days previously had been kicked in the abdomen by another boy. Immediately afterwards he experienced abdominal pain, which continued until death, shortly after his admission to hospital. In view of the definite traumatic history the coroner ordered an autopsy, which showed that the boy had died as the result of a simple intussusception. The boy's assailant was subsequently arrested and charged with manslaughter. On being summoned to give evidence I consulted the honorary hospital staff and looked up the literature on the subject, but could find no evidence to justify the opinion that intussusception could be traumatic in origin. I explained the matter in court, and the magistrate discharged the boy.

THE ADVANTAGES OF DRAFTS.

SINCE the note under this heading was published a fortnight ago (p. 752) we have come across expert testimony from an unexpected quarter to the importance of frequent revision if an article is to be effective. Anatole France, upon whose opinions and practice the note was based, made sure with his seven or eight drafts that what he had in mind was conveyed to his readers in the best and fewest words, in the best order; an authority (after our recent experience we will not venture to give his name) once said that was a definition of good prose. France knew that in no other way could he at once give pleasure to his reader, arrest his attention, and impress his memory. It may be said that he was thinking of the aesthetics of writing, of the essential of a good style. But our new authority is Mr. Joseph Pulitzer, the proprietor of the *New York World*, who raised that newspaper from a position of inferiority to one of commanding influence in the United States. He was a Hungarian by birth, and when he got to the United States at the age of 17 knew not a word of English. He may be supposed, therefore, not greatly to have troubled about a good English style, but in writing to a newly appointed editor he counselled him to have in every issue "one leader strong, striking, and respect-commanding. After a while people will be educated to look for that leader, and therefore the man who writes it should touch no other thing the same day. Indeed, I will give him forty-eight hours, and make him rewrite it sixteen times." This may be reckoned unheard-of luxury; but one of the defects of medical literature at the present day is prolixity, and we strongly suspect that this fault is often due to the author sending his first draft for publication.

DERMATITIS FOLLOWING ULTRA-VIOLET LIGHT.

DR. J. GRAHAME CAMPBELL (Rotherham) writes to express the hope that the paper by Drs. MacCormac and McCrea (April 11th, p. 693) will not have the effect of hindering further development of treatment by ultra-violet rays. To obviate untoward results it is, Dr. Campbell considers, only necessary to employ a type of lamp which cannot be used in the manner detailed. He finds that the tungsten arc lamp (Clark's pattern) fulfils all demands and gives gratifying results in affections so widely apart pathologically as tuberculous sinuses and favus, chronic ulcers and neuritis.

HEART STRAIN.

DR. HARRINGTON SAINSBURY (London, W.) writes: Dr. Samways having reopened (BRITISH MEDICAL JOURNAL, April 18th, p. 761) the subject of the pressure transmitted back to the ventricle from the aorta during ventricular diastole, in the case of aortic leakage, will you allow me to point out that, inasmuch as the ventricle has more or less emptied itself during systole, it will present a potential cavity enclosed by slack walls, at the moment when, on cessation of its systole, aortic regurgitation sets in? This being so, the whole force of the aortic recoil will spend itself in the rate of flow of the backward current and none of it will be transformed into pressure within the ventricle, for the simple reason that the relaxed walls, opposing no resistance to the inflow (save the inertia of their own walls, a negligible quantity), yield passively to the influx. Only when the potential cavity has been abolished—that is, the ventricle filled—will the walls oppose by their stretch the distension of the ventricle, and only then will the aortic reflux begin to generate intraventricular pressure; even then, in its first beginnings, the resistance to stretch will be relatively slight, and long before it has assumed appreciable quantity the cardiac cycle will have brought back ventricular systole and saved the situation. The laws of the Bramah press are the laws of forces in balance—that is, in stasis—and rigidity of the containing walls is an essential condition. They come into consideration during ventricular systole, in that stage which precedes the forcing of the auricular valve.

ARRESTED DEVELOPMENT.

DR. JOHN WOOD (Sheffield) writes: The following case appears to be of sufficient interest to justify its being recorded. A young lady, aged 27, private secretary in an office, consulted me in October, 1924, for very intractable constipation. As the usual remedies gave no relief, I arranged to examine her at her home, when she informed me that she had never menstruated. While exploring the bowel I discovered that she had atresia vaginae, and, on further examination, I could feel nothing corresponding to the uterus. In the left pelvis I found a distinct swelling, which I thought might be a kidney; two surgeons subsequently confirmed this diagnosis. Arrangements were being made for an *x*-ray examination when the patient became very depressed, and in the following January committed suicide. I obtained permission from the coroner to open the abdomen, but was only allowed about twenty minutes for the examination. I found the pelvis occupied mainly by connective tissue; there was no trace of the vagina or uterus, and the ovaries were present in a rudimentary condition. I traced the Fallopian tubes to where they ended, just behind the symphysis. There was one kidney, weighing 6 oz., in the left side of the pelvis, with a single ureter; no suprarenal body was attached to it. There appeared to be an abnormal number of large vessels and bands of fibrous tissue passing in front of the descending colon, which, I think, accounted for the constipation and the peculiar ribbon-shaped stools. The patient had told me that she was fond of male companionship. Her mother had just died from malignant disease of the bowel, and the girl's mind became obsessed with the idea that she was similarly afflicted, which, no doubt, drove her to commit suicide.

TREATMENT OF PUERPERAL INFECTION.

DR. F. S. TAYLOR THOMAS (Perth, Western Australia) writes to call attention to a line of treatment he has used for a number of years; since adopting it he has not lost a single case from puerperal sepsis. It is, he says, the placing *in utero* (after blunt curettage and gentle douching of the septic uterus to remove grosser particles of debris) of a rubber tube slightly larger than douche tubing, in which windows (six or eight) have been cut throughout the entire length of the intrauterine portion. This is kept *in situ* by a careful packing of the vagina with iodoform gauze. One limb is attached to an irrigator and the other limb to a piece of tubing which passes to a pail at the side of the bed. Continuous eusol or weak iodine irrigation is then maintained until the temperature falls to normal (twenty-four to forty-eight hours) and the uterus begins to expel the tube by its contraction, as evidenced by the leakage under the patient, who should be placed on a Kelly's douching cushion. I am well aware, Dr. Taylor Thomas adds, that this treatment is opposed to the views of many authorities whose views one is bound to respect; but, nevertheless, all the theories of all the experts in the universe cannot get over results. I had the honour of introducing this method of treatment to the medical profession at a meeting of the Perth Branch of the British Medical Association in April, 1924, and the paper was published in the *Medical Journal of Australia* of July 5th, 1924.

TETANUS CAUSED BY EAR LOBE PUNCTURE.

CAPTAIN S. K. CHAUDHURI, M.B.E., late I.M.S., chief medical officer Benares State, writes: In less than six weeks I have seen five cases of tetanus, all due to the lobes of the ears being pierced for earrings with dirty instruments, the insertion of dirty thread, and the use of dirty applications for the subsequent inflammation. The incubation period ranged from four to twelve days.

Case 1.—A Mohammedan girl, aged 6, was found in an advanced condition of tetanus after an incubation period of one week. Trismus was complete, the neck muscles were stiff, and there were frequent contractions of the muscles of the limbs and back. Chloral and bromide were given internally, and 3,000 units of antitetanic serum was injected into the flank. She died on the twelfth day of the disease.

Case 2.—A Hindu girl, aged 7, after an incubation period of six days, developed tetanus, and was similarly treated, 1,500 units of antitetanic serum being injected. She died on the thirteenth day of illness.

Case 3.—A married Mohammedan lady, aged 22, complained of lockjaw on the fourth day after the ear-boring, and two days later the lockjaw was complete. An injection of 3,000 units of antitetanic serum was given next day, followed by subcutaneous injections of 2 per cent. carbolic lotion, beginning with 5 minims once a day, and rising to 8 minims, five injections being given in all. Bromide, chloral, and, later on, chloretone, were administered internally. The spasms, which were frequent at first, gradually grew less, and the trismus relaxed, the patient making an uninterrupted recovery.

Case 4.—A Hindu girl, aged 7, showed a mild chronic condition of tetanus, the length of the incubation period being unknown. Trismus was partial, the muscles of the back and abdomen were stiff and those of the lower limbs had lost their suppleness, causing frequent falls when attempts at walking were made. Injections of 2 per cent. carbolic lotion were given, starting with 2 minims and rising to 5-minim doses on alternate days, six doses in all being given. Chloral and bromide were administered internally, and complete recovery resulted.

Case 5.—A Mohammedan girl, aged 18 months, was only seen when dying, after an incubation period of six days. Carbolic lotion was injected once, but no more was heard of the patient, who presumably died.

Tetanus arising in this way is frequent, but its incubation period in the tropics is shorter than that given in the textbooks. The cost of antitetanic serum appeared prohibitive; the majority of the patients, being the children of poor people, could not be treated by the larger doses of serum necessary for cure. Medical officers should impress upon the ignorant the necessity of cleanliness, even in so simple an operation as ear-boring.

I am indebted to Dr. T. N. Sinha for his advice to use Baccelli's method of carbolic lotion injection, which had been very successful in his hands, though previously a failure in mine.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *196*.